

PREFACE

This supplement contains amendments to the environmental regulations adopted during the 1st quarter of 2005 (January - March).

The amendments in this publication include the following:

Media	Rule Log #	Final Date
Air	(AQ247*)	March 20, 2005
Water Quality	(WQ057*)	February 20, 2005
Radiation Protection	(RP037)	January 20, 2005

* Fast-Track Rule – Federal regulations promulgated in accordance with expedited procedures in R.S. 49:953(F)(3)

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Title 33
ENVIRONMENTAL QUALITY

Part III. Air

Chapter 14. Conformity

**Subchapter B. Conformity to State or
Federal Implementation Plans of
Transportation Plans, Programs, and
Projects Developed, Funded, or
Approved Under Title 23 U.S.C. or the
Federal Transit Act**

§1432. Incorporation by Reference

A. 40 CFR Part 93, Subpart A, July 1, 2004, is hereby incorporated by reference with the exclusion of Section 105.

Also incorporated by reference are amendments published in the *Federal Register* on July 1, 2004 (69 FR 40004-40081, No. 126) and July 20, 2004 (69 FR 43325-43327, No. 138).

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2054.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Air Quality and Radiation Protection, Air Quality Division, LR 24:1280 (July 1998), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 27:2229 (December 2001), LR 28:994 (May 2002), LR 29:697 (May 2003), LR 30:1009 (May 2004), amended by the Office of Environmental Assessment, LR 31:640 (March 2005).

Title 33 ENVIRONMENTAL QUALITY

Part IX. Water Quality

Subpart 2. The Louisiana Pollutant Discharge Elimination System (LPDES) Program

Chapter 25. Permit Application and Special LPDES Program Requirements

§2501. Application for a Permit

A. – Q.15. ...

R. Applications for Facilities with Cooling Water Intake Structures

1. Application requirements for facilities with cooling water intake structures are as follows.

a. New Facilities with New or Modified Cooling Water Intake Structures. New facilities with cooling water intake structures, as defined in LAC 33:IX.Chapter 47.Subchapter A, shall submit to the state administrative authority for review the information required under Paragraphs R.2, 3, and 4 of this Section and LAC 33:IX.4713. Requests for alternative requirements under LAC 33:IX.4711 shall be submitted with the permit application.

b. Phase II Existing Facilities. Phase II existing facilities, as defined in LAC 33:IX.Chapter 47.Subchapter B, shall submit to the state administrative authority for review information required under Paragraphs R.2, 3, and 5 of this Section and all applicable provisions of LAC 33:IX.4739 as part of their application, except for the proposal for information collection, which shall be provided in accordance with LAC 33:IX.4739.B.1.

2. – 4.h. ...

5. Cooling Water System Data. Phase II existing facilities, as defined in LAC 33:IX.Chapter 47.Subchapter B, shall provide the following information for each cooling water intake structure they use:

a. a narrative description of the operation of the cooling water system, including:

i. its relationship to cooling water intake structures;

ii. the proportion of the design intake flow that is used in the system;

iii. the number of days of the year the cooling water system is in operation; and

iv. seasonal changes in the operation of the system, if applicable; and

b. design and engineering calculations prepared by a qualified professional and supporting data to support the description required by Subparagraph R.5.a of this Section.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular Section 2074(B)(3) and (B)(4).

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Water Resources, LR 21:945 (September 1995), amended LR 23:723 (June 1997), amended by the Office of the Secretary, LR 25:661 (April 1999), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2552 (November 2000), LR 26:2756 (December 2000), LR 27:45 (January 2001), LR 28:465 (March 2002), LR 28:1766 (August 2002), LR 29:1462 (August 2003), repromulgated LR 30:230 (February 2004), amended by the Office of Environmental Assessment, LR 30:2028 (September 2004), LR 31:425 (February 2005).

Chapter 27. LPDES Permit Conditions

§2707. Establishing Limitations, Standards, and Other Permit Conditions

A.1. – B.2. ...

3. Requirements applicable to cooling water intake structures under Section 316(b) of the CWA, in accordance with LAC 33:IX.Chapter 47.Subchapters A and B.

C. – S. ...

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular Section 2074(B)(3) and (B)(4).

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Water Resources, LR 21:945 (September 1995), amended LR 23:724 (June 1997), LR 23:1523 (November 1997), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2282 (October 2000), LR 26:2764 (December 2000), LR 28:469 (March 2002), LR 28:1767 (August 2002), repromulgated LR 30:230 (February 2004), amended by the Office of Environmental Assessment, LR 31:426 (February 2005).

Chapter 31. General LPDES Program Requirements

§3113. Public Notice of Permit Actions and Public Comment Period

A. – D.1.g. ...

h. requirements applicable to cooling water intake structures under Section 316(b) of the CWA, in accordance with LAC 33:IX.Chapter 47.Subchapters A and B; and

D.1.i. – F. ...

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular Section 2074(B)(3) and (B)(4).

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Water Resources, LR 21:945 (September 1995), amended by the Water Pollution Control Division, LR 23:725 (June 1997), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2554 (November 2000), LR 28:473 (March 2002), LR 28:1767 (August 2002), repromulgated LR 30:231 (February 2004),

amended by the Office of Environmental Assessment, LR 31:426 (February 2005).

Chapter 47. Criteria Applicable to Cooling Water Intake Structures under Section 316(b) of the Act

[NOTE: This Chapter is written in a special format to make it easier to understand the regulatory requirements. Like other department and USEPA regulations, this establishes enforceable legal requirements. For this Chapter, *I* and *you* refer to the owner/operator.]

Subchapter A. Requirements Applicable to Cooling Water Intake Structures for New Facilities under Section 316(b) of the Act

§4701. What are the purpose and scope of this Subchapter?

A. This Subchapter establishes requirements that apply to the location, design, construction, and capacity of cooling water intake structures at new facilities. The purpose of these requirements is to establish the best technology available for minimizing adverse environmental impact associated with the use of cooling water intake structures. These requirements are implemented through LPDES permits issued in accordance with Section 402 of the CWA, under the assumption of the NPDES program.

B. This Subchapter implements Section 316(b) of the CWA for new facilities. Section 316(b) of the CWA provides that any standard established in accordance with Section 301 or 306 of the CWA and applicable to a point source shall require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact.

C. ...

D. Nothing in this Subchapter shall be construed to preclude or deny the right of any state or political subdivision of a state or any interstate agency under Section 510 of the CWA to adopt or enforce any requirement with respect to control or abatement of pollution that is more stringent than those required by federal law.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular Section 2074(B)(3) and (B)(4).

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Environmental Assessment, Environmental Planning Division, LR 28:1767 (August 2002), repromulgated LR 30:231 (February 2004), amended by the Office of Environmental Assessment, LR 31:426 (February 2005).

§4703. Who is subject to this Subchapter?

A. This Subchapter applies to a new facility if it:

A.1. – C. ...

D. This Subchapter does not apply to facilities that employ cooling water intake structures in the offshore and coastal subcategories of the oil and gas extraction point

source category, as defined under 40 CFR 435.10 and 40 CFR 435.40.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular Section 2074(B)(3) and (B)(4).

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Environmental Assessment, Environmental Planning Division, LR 28:1767 (August 2002), repromulgated LR 30:231 (February 2004), amended by the Office of Environmental Assessment, LR 31:427 (February 2005).

§4705. When must I comply with this Subchapter?

A. You must comply with this Subchapter when an LPDES permit containing requirements consistent with this Subchapter is issued to you.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular Section 2074(B)(3) and (B)(4).

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Environmental Assessment, Environmental Planning Division, LR 28:1768 (August 2002), repromulgated LR 30:231 (February 2004), amended by the Office of Environmental Assessment, LR 31:427 (February 2005).

§4707. What special definitions apply to this Subchapter?

Annual Mean Flow – Tidal River ...

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular Section 2074(B)(3) and (B)(4).

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Environmental Assessment, Environmental Planning Division, LR 28:1768 (August 2002), amended LR 29:2375 (November 2003), repromulgated LR 30:231 (February 2004), amended by the Office of Environmental Assessment, LR 31:427 (February 2005).

§4709. As an owner or operator of a new facility, what must I do to comply with this Subchapter?

A. – E. ...

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular Section 2074(B)(3) and (B)(4).

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Environmental Assessment, Environmental Planning Division, LR 28:1769 (August 2002), amended LR 29:2375 (November 2003), repromulgated LR 30:231 (February 2004), amended by the Office of Environmental Assessment, LR 31:427 (February 2005).

§4719. What must the state administrative authority do to comply with the requirements of this Subchapter?

A. – B.3. ...

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular Section 2074(B)(3) and (B)(4).

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Environmental Assessment, Environmental Planning Division, LR 28:1774 (August 2002), repromulgated LR 30:232 (February 2004), amended by the Office of Environmental Assessment, LR 31:427 (February 2005).

Subchapter B. Requirements Applicable to Cooling Water Intake Structures for Phase II Existing Facilities under Section 316(b) of the Act

§4731. What are the purpose and scope of this Subchapter?

A. This Subchapter establishes requirements that apply to the location, design, construction, and capacity of cooling water intake structures at existing facilities that are subject to this Subchapter (i.e., Phase II existing facilities). The purpose of these requirements is to establish the best technology available for minimizing adverse environmental impact associated with the use of cooling water intake structures. These requirements are implemented through LPDES permits issued under Section 402 of the Clean Water Act (CWA), under the assumption of the NPDES program.

B. Existing facilities that are not subject to requirements under Subchapter A or B of this Chapter shall meet requirements under Section 316(b) of the CWA determined by the state administrative authority on a case-by-case, best professional judgment (BPJ) basis.

C. **Alternative Regulatory Requirements.** Notwithstanding any other provision of this Subchapter, if a state demonstrates to the administrator that it has adopted alternative regulatory requirements in its NPDES program that will result in environmental performance within a watershed that is comparable to the reductions of impingement mortality and entrainment that would otherwise be achieved under LAC 33:IX.4737, the administrator shall approve such alternative regulatory requirements.

D. Nothing in this Subchapter shall be construed to preclude or deny the right of any state or political subdivision of a state or any interstate agency under Section 510 of the CWA to adopt or enforce any requirement with respect to control or abatement of pollution that is not less stringent than those required by federal law.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular Section 2074(B)(3) and (B)(4).

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Environmental Assessment, LR 31:427 (February 2005).

§4733. What is a Phase II existing facility?

A. An *existing facility*, as defined in LAC 33:IX.4735.A, is a Phase II existing facility subject to this Subchapter if it meets each of the following criteria.

1. It is a point source.
2. It uses or proposes to use cooling water intake structures with a total design intake flow of 50 million gallons per day (MGD) or more to withdraw cooling water from waters of the state.

3. As its primary activity, the facility both generates and transmits electric power, or generates electric power but sells it to another entity for transmission.

4. It uses at least 25 percent of the water withdrawn exclusively for cooling purposes, measured on an average annual basis.

B. In the case of a Phase II existing facility that is co-located with a manufacturing facility, only that portion of the combined cooling water intake flow that is used by the Phase II facility to generate electricity for sale to another entity shall be considered for purposes of determining whether the 50 MGD and 25 percent criteria in Paragraphs A.2 and 4 of this Section have been exceeded.

C. Use of a cooling water intake structure includes obtaining cooling water by any sort of contract or arrangement with one or more independent suppliers of cooling water if the supplier withdraws water from waters of the state but is not itself a Phase II existing facility, except as provided in Subsection D of this Section. This provision is intended to prevent circumvention of these requirements by creating arrangements to receive cooling water from an entity that is not itself a Phase II existing facility.

D. Notwithstanding Subsection C of this Section, obtaining cooling water from a public water system or using treated effluent as cooling water does not constitute use of a cooling water intake structure for purposes of this Subchapter.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular Section 2074(B)(3) and (B)(4).

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Environmental Assessment, LR 31:427 (February 2005).

§4735. What special definitions apply to this Subchapter?

A. In addition to the definitions provided in LAC 33:IX.2313, the following special definitions apply to this Subchapter.

Adaptive Management Method—a type of project management method where a facility chooses an approach to meeting the project goal, monitors the effectiveness of that approach, and then based on monitoring and any other relevant information, makes any adjustments necessary to ensure continued progress toward the project's goal. This cycle of activity is repeated as necessary to reach the project's goal.

Annual Mean Flow—the average of daily flows over a calendar year.

All Life Stages—eggs, larvae, juveniles, and adults.

Calculation Baseline—an estimate of impingement mortality and entrainment that would occur at your site assuming that the cooling water system has been designed as a once-through system; the opening of the cooling water intake structure is located at, and the face of the standard 3/8-inch mesh traveling screen is oriented parallel to, the shoreline near the surface of the source water body; and the

baseline practices, procedures, and structural configuration are those that your facility would maintain in the absence of any structural or operational controls, including flow or velocity reductions, implemented in whole or in part for the purposes of reducing impingement mortality and entrainment. You may also choose to use the current level of impingement mortality and entrainment as the calculation baseline. The calculation baseline may be estimated using historical impingement mortality and entrainment data from your facility or from another facility with comparable design, operational, and environmental conditions; current biological data collected in the water body in the vicinity of your cooling water intake structure; or current impingement mortality and entrainment data collected at your facility. You may request that the calculation baseline be modified to be based on a location of the opening of the cooling water intake structure at a depth other than at or near the surface if you can demonstrate to the state administrative authority that the other depth would correspond to a higher baseline level of impingement mortality and/or entrainment.

Capacity Utilization Rate—the ratio between the average annual net generation of power by the facility (in MWh) and the total net capability of the facility to generate power (in MW) multiplied by the number of hours during a year. In cases where a facility has more than one intake structure, and each intake structure provides cooling water exclusively to one or more generating units, the capacity utilization rate may be calculated separately for each intake structure, based on the capacity utilization of the units it services. Applicable requirements under this Subpart would then be determined separately for each intake structure. The average annual net generation should be measured over a five-year period, if available, of representative operating conditions, unless the facility makes a binding commitment to maintain capacity utilization below 15 percent for the life of the permit, in which case the rate may be based on this commitment. For purposes of this Subchapter, the capacity utilization rate applies to only that portion of the facility that generates electricity for transmission or sale using a thermal cycle employing the steam water system as the thermodynamic medium.

Closed-Cycle Recirculating System—a system designed, using minimized make-up and blowdown flows, to withdraw water from a natural or other water source to support contact and/or noncontact cooling uses within a facility. The water is usually sent to a cooling canal or channel, lake, pond, or tower to allow waste heat to be dissipated to the atmosphere and then is returned to the system. (Some facilities divert the waste heat to other process operations.) New source water (make-up water) is added to the system to replenish losses that have occurred due to blowdown, drift, and evaporation.

Cooling Water—water used for contact or noncontact cooling, including water used for equipment cooling, evaporative cooling tower makeup, and dilution of effluent heat content. The intended use of the cooling water is to absorb waste heat rejected from the process or processes used, or from auxiliary operations on the facility's premises. Cooling water that is used in a manufacturing process either

before or after it is used for cooling is considered process water for the purposes of calculating the percentage of a facility's intake flow that is used for cooling purposes in LAC 33:IX.4733.A.4.

Cooling Water Intake Structure—the total physical structure and any associated constructed waterways used to withdraw cooling water from waters of the state. The cooling water intake structure extends from the point at which water is withdrawn from the surface water source up to, and including, the intake pumps.

Design and Construction Technology—any physical configuration of the cooling water intake structure, or a technology that is placed in the water body in front of the cooling water intake structure, to reduce impingement mortality and/or entrainment. Design and construction technologies include, but are not limited to, location of the intake structure, intake screen systems, passive intake systems, fish diversion and/or avoidance systems, and fish handling and return systems. Restoration measures are not design and construction technologies for purposes of this definition.

Design Intake Flow—the value assigned, during the cooling water intake structure design, to the total volume of water withdrawn from a source water body over a specific time period.

Design Intake Velocity—the value assigned, during the design of a cooling water intake structure, to the average speed at which intake water passes through the open area of the intake screen, or other device, upon which organisms might impinge or through which they might be entrained.

Diel—daily and refers to variation in organism abundance and density over a 24-hour period due to the influence of water movement, physical or chemical changes, and changes in light intensity.

Entrainment—the incorporation of any life stages of fish and shellfish with intake water flow entering and passing through a cooling water intake structure and into a cooling water system.

Estuary—a semi-enclosed body of water that has a free connection with open seas and within which the seawater is measurably diluted with fresh water derived from land drainage. The salinity of an estuary exceeds 0.5 parts per thousand (by mass) but is typically less than 30 parts per thousand (by mass).

Existing Facility—any facility that commenced construction as described in 40 CFR 122.29(b)(4) on or before January 17, 2002, and any modification of, or any addition of, a unit at such a facility that does not meet the definition of a new facility in 40 CFR 125.83.

Freshwater River or Stream—a lotic (free-flowing) system that does not receive significant inflows of water from oceans or bays due to tidal action. For the purposes of this regulation, a flow-through reservoir with a retention time of seven days or less shall be considered a freshwater river or stream.

Impingement—the entrapment of any life stages of fish and shellfish on the outer part of an intake structure or against a screening device during periods of intake water withdrawal.

Lake or Reservoir—any inland body of open water with some minimum surface area free of rooted vegetation and with an average hydraulic retention time of more than seven days. Lakes or reservoirs might be natural water bodies or impounded streams, usually fresh, surrounded by land or by land and a man-made retainer (e.g., a dam). Lakes or reservoirs might be fed by rivers, streams, springs, and/or local precipitation.

Moribund—dying; close to death.

Natural Thermal Stratification—the naturally occurring and/or existing division of a water body into horizontal layers of differing densities as a result of variations in temperature at different depths.

Ocean—marine open coastal waters with a salinity greater than or equal to 30 parts per thousand (by mass).

Once-Through Cooling Water System—a system designed to withdraw water from a natural or other water source, use it at the facility to support contact and/or noncontact cooling uses, and then discharge it to a water body without recirculation. Once-through cooling systems sometimes employ canals/channels, ponds, or non-recirculating cooling towers to dissipate waste heat from the water before it is discharged.

Operational Measure—a modification to any operation at a facility that serves to minimize impact to fish and shellfish from the cooling water intake structure. Examples of operational measures include, but are not limited to, reductions in cooling water intake flow through the use of variable speed pumps and seasonal flow reductions or shutdowns, and more frequent rotation of traveling screens.

Phase II Existing Facility—any existing facility that meets the criteria specified in LAC 33:IX.4733.

Source Water—the waters of the U.S. from which the cooling water is withdrawn.

Supplier—an entity, other than the regulated facility, that owns and operates its own cooling water intake structure and directly withdraws water from waters of the state. The supplier sells the cooling water to other facilities for their use, but may also use a portion of the water itself. An entity that provides potable water to residential populations (e.g., public water system) is not a supplier for purposes of this Subchapter.

Thermocline—the middle layer of a thermally stratified lake or a reservoir. In this layer, there is a rapid change in temperatures between the top and bottom of the layer.

Tidal River—the most seaward reach of a river or stream where the salinity is typically less than or equal to 0.5 parts per thousand (by mass) at a time of annual low flow and whose surface elevation responds to the effects of coastal lunar tides.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular Section 2074(B)(3) and (B)(4).

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Environmental Assessment, LR 31:428 (February 2005).

§4737. How will requirements reflecting best technology available for minimizing adverse environmental impact be established for my Phase II existing facility?

A. Compliance Alternatives. You must select and implement one of the following five alternatives for establishing best technology available for minimizing adverse environmental impact at your facility.

1. You may demonstrate to the state administrative authority that you have:

a. reduced, or will reduce, your flow commensurate with a closed-cycle recirculating system. In this case, you are deemed to have met the applicable performance standards and will not be required to demonstrate further that your facility meets the impingement mortality and entrainment performance standards specified in Subsection B of this Section. In addition, you are not subject to the requirements in LAC 33:IX.4739, 4741, 4743, or 4745. However, you may still be subject to any more stringent requirements established under Subsection E of this Section; or

b. reduced, or will reduce, your maximum through-screen design intake velocity to 0.5 ft/s or less. In this case, you are deemed to have met the impingement mortality performance standards and will not be required to demonstrate further that your facility meets the performance standards for impingement mortality specified in Subsection B of this Section, and you are not subject to the requirements in LAC 33:IX.4739, 4741, 4743, or 4745 as they apply to impingement mortality. However, you are still subject to any applicable requirements for entrainment reduction and may still be subject to any more stringent requirements established under Subsection E of this Section.

2. You may demonstrate to the state administrative authority that your existing design and construction technologies, operational measures, and/or restoration measures meet the performance standards specified in Subsection B of this Section and/or the restoration requirements in Subsection C of this Section.

3. You may demonstrate to the state administrative authority that you have selected, and will install and properly operate and maintain, design and construction technologies, operational measures, and/or restoration measures that will, in combination with any existing design and construction technologies, operational measures, and/or restoration measures, meet the performance standards specified in Subsection B of this Section and/or the restoration requirements in Subsection C of this Section.

4. You may demonstrate to the state administrative authority that you have installed, or will install, and properly

operate and maintain an approved design and construction technology in accordance with LAC 33:IX.4747.A or B.

5. You may demonstrate to the state administrative authority that you have selected, installed, and are properly operating and maintaining, or will install and properly operate and maintain, design and construction technologies, operational measures, and/or restoration measures that the state administrative authority has determined to be the best technology available to minimize adverse environmental impact for your facility in accordance with Subparagraph A.5.a or b of this Section.

a. If the state administrative authority determines that data specific to your facility demonstrate that the costs of compliance under alternatives in Paragraphs A.2 through 4 of this Section would be significantly greater than the costs considered by the administrator for a facility like yours in establishing the applicable performance standards in Subsection B of this Section, the state administrative authority will make a site-specific determination of the best technology available for minimizing adverse environmental impact. This determination will be based on reliable, scientifically- valid cost and performance data submitted by you and any other information that the state administrative authority deems appropriate. The state administrative authority will establish site-specific alternative requirements based on new and/or existing design and construction technologies, operational measures, and/or restoration measures that achieve an efficacy that is, in the judgment of the state administrative authority, as close as practicable to the applicable performance standards in Subsection B of this Section, without resulting in costs that are significantly greater than the costs considered by the administrator for a facility like yours in establishing the applicable performance standards. The state administrative authority's site-specific determination may conclude that design and construction technologies, operational measures, and/or restoration measures in addition to those already in place are not justified because of the significantly greater costs. To calculate the costs considered by the state administrative authority for a facility like yours in establishing the applicable performance standards you must:

- i. determine which technology the administrator modeled as the most appropriate compliance technology for your facility;
- ii. using the administrator's costing equations, calculate the annualized capital and net operation and maintenance (O&M) costs for a facility with your design intake flow using this technology;
- iii. determine the annualized net revenue loss associated with net construction downtime that the administrator modeled for your facility to install this technology;
- iv. determine the annualized pilot study costs that the administrator modeled for your facility to test and optimize this technology;

v. sum the cost items in Clauses A.5.b.ii, iii, and iv of this Section; and

vi. determine if the performance standards that form the basis of these estimates (i.e., impingement mortality reduction only or impingement mortality and entrainment reduction) are applicable to your facility, and if necessary, adjust the estimates to correspond to the applicable performance standards.

b. If the state administrative authority determines that data specific to your facility demonstrate that the costs of compliance under alternatives in Paragraphs A.2 through 4 of this Section would be significantly greater than the benefits of complying with the applicable performance standards at your facility, the state administrative authority will make a site-specific determination of best technology available for minimizing adverse environmental impact. This determination will be based on reliable, scientifically valid cost and performance data submitted by you and any other information the state administrative authority deems appropriate. The state administrative authority will establish site-specific alternative requirements based on new and/or existing design and construction technologies, operational measures, and/or restoration measures that achieve an efficacy that, in the judgment of the state administrative authority, is as close as practicable to the applicable performance standards in Subsection B of this Section without resulting in costs that are significantly greater than the benefits at your facility. The state administrative authority's site-specific determination may conclude that design and construction technologies, operational measures, and/or restoration measures in addition to those already in place are not justified because the costs would be significantly greater than the benefits at your facility.

B. National Performance Standards

1. Impingement Mortality Performance Standards. If you choose a compliance alternative in Paragraph A.2, 3, or 4 of this Section, you must reduce impingement mortality for all life stages of fish and shellfish by 80 to 95 percent from the calculation baseline.

2. Entrainment Performance Standards. If you choose a compliance alternative in Subparagraph A.1.b or Paragraph A.2, 3, or 4 of this Section, you must also reduce entrainment of all life stages of fish and shellfish by 60 to 90 percent from the calculation baseline if:

- a. your facility has a capacity utilization rate of 15 percent or greater; and
- b. your facility uses cooling water withdrawn from:
 - i. a tidal river, estuary, or ocean; or
 - ii. a freshwater river or stream, and the design intake flow of your cooling water intake structures is greater than 5 percent of the mean annual flow.

3. Additional Performance Standards for Facilities Withdrawing from a Lake or a Reservoir. If your facility withdraws cooling water from a lake or a reservoir and you propose to increase the design intake flow of cooling water

intake structures it uses, your increased design intake flow shall not disrupt the natural thermal stratification or turnover pattern, where present, of the source water, except in cases where the disruption does not adversely affect the management of fisheries. In determining whether any such disruption does not adversely affect the management of fisheries, you should consult with federal, state, or tribal fish and wildlife management agencies.

4. Use of Performance Standards for Site-Specific Determinations of Best Technology Available. The performance standards in Paragraphs B.1-3 of this Section must also be used for determining eligibility for site-specific determinations of best technology available for minimizing adverse environmental impact and establishing site-specific requirements that achieve an efficacy as close as practicable to the applicable performance standards without resulting in costs that are significantly greater than those considered by the state administrative authority for a facility like yours in establishing the performance standards or costs that are significantly greater than the benefits at your facility in accordance with Paragraph A.5 of this Section.

C. Requirements for Restoration Measures. With the approval of the state administrative authority, you may implement and adaptively manage restoration measures that produce and result in increases of fish and shellfish in your facility's watershed in place of, or as a supplement to, installing design and control technologies and/or adopting operational measures that reduce impingement mortality and entrainment. You must demonstrate to the state administrative authority that:

1. you have evaluated the use of design and construction technologies and operational measures for your facility and determined that the use of restoration measures is appropriate because meeting the applicable performance standards or site-specific requirements through the use of design and construction technologies and/or operational measures alone is less feasible, less cost-effective, or less environmentally desirable than meeting the standards or requirements in whole or in part through the use of restoration measures; and

2. the restoration measures you will implement, alone or in combination with design and construction technologies and/or operational measures, will produce ecological benefits (fish and shellfish), including maintenance or protection of community structure and function in your facility's water body or watershed, at a level that is substantially similar to the level you would achieve by meeting the applicable performance standards under Subsection B of this Section, or that satisfies alternative site-specific requirements established in accordance with Paragraph A.5 of this Section.

D. Compliance Using a Technology Installation and Operation Plan or Restoration Plan

1. If you choose one of the compliance alternatives in Paragraph A.2, 3, 4, or 5 of this Section, you may request that compliance with the requirements of Subsection B of this Section during the first permit containing requirements

consistent with this Subchapter be determined based on whether you have complied with the construction, operational, maintenance, monitoring, and adaptive management requirements of a technology installation and operation plan developed in accordance with LAC 33:IX.4739.B.4.b, for any design and construction technologies and/or operational measures, and/or a restoration plan developed in accordance with LAC 33:IX.4739.B.5, for any restoration measures. The technology installation and operation plan must be designed to meet applicable performance standards in Subsection B of this Section or alternative site-specific requirements developed in accordance with Paragraph A.5 of this Section. The restoration plan must be designed to achieve compliance with the applicable requirements in Paragraph C of this Section.

2. During subsequent permit terms, if you selected and installed design and construction technologies and/or operational measures and have been in compliance with the construction, operational, maintenance, monitoring, and adaptive management requirements of your technology installation and operation plan during the preceding permit term, you may request that compliance with the requirements of this Section during the following permit term be determined based on whether you remain in compliance with your technology installation and operation plan, revised in accordance with your adaptive management plan in LAC 33:IX.4739.B.4.b.iii if applicable performance standards are not being met. Each request and approval of a technology installation and operation plan will be limited to one permit term.

3. During subsequent permit terms, if you selected and installed restoration measures and have been in compliance with the construction, operational, maintenance, monitoring, and adaptive management requirements in your restoration plan during the preceding permit term, you may request that compliance with the requirements of this Section during the following permit term be determined based on whether you remain in compliance with your restoration plan, revised in accordance with your adaptive management plan in LAC 33:IX.4739.B.5.e if applicable performance standards are not being met. Each request and approval of a restoration plan will be limited to one permit term.

E. More Stringent Standards. The state administrative authority may establish more stringent requirements as best technology available for minimizing adverse environmental impact if the state administrative authority determines that your compliance with the applicable requirements of this Section would not meet the requirements of applicable state and tribal law, or other federal law.

F. Nuclear Facilities. If you demonstrate to the state administrative authority based on consultation with the Nuclear Regulatory Commission that compliance with this Subpart would result in a conflict with a safety requirement established by the commission, the state administrative authority will make a site-specific determination of best technology available for minimizing adverse environmental

impact that would not result in a conflict with the Nuclear Regulatory Commission's safety requirement.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular Section 2074(B)(3) and (B)(4).

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Environmental Assessment, LR 31:429 (February 2005).

§4739. As an owner or operator of a Phase II existing facility, what must I collect and submit when I apply for my reissued LPDES permit?

A. Submittal of Information for an Owner or Operator of a Phase II Existing Facility

1. You must submit to the state administrative authority the proposal for information collection required in Paragraph B.1 of this Section prior to the start of information collection activities.

2. You must submit to the state administrative authority the information required in LAC 33:IX.2501.R.2, 3, and 5 and any applicable portions of the comprehensive demonstration study, except for the proposal for information collection required by Paragraph B.1 of this Section.

a. You must submit your LPDES permit application in accordance with the time frames specified in LAC 33:IX.2501.D.2.

b. If your existing permit expires before July 9, 2008, you may request that the state administrative authority establish a schedule for you to submit the information required by this Section as expeditiously as practicable, but not later than January 7, 2008. Between the time your existing permit expires and the time an LPDES permit containing requirements consistent with this Subchapter is issued to your facility, the best technology available to minimize adverse environmental impact will continue to be determined based on the state administrative authority's best professional judgment.

3. In subsequent permit terms, the state administrative authority may approve a request to reduce the information required to be submitted in your permit application on the cooling water intake structure and the source water body, if conditions at your facility and in the water body remain substantially unchanged since your previous application. You must submit your request for reduced cooling water intake structure and water body application information to the state administrative authority at least one year prior to the expiration of the permit. Your request must identify each required information item in LAC 33:IX.2501.R and this Section that you determine has not substantially changed since the previous permit application and the basis for your determination.

B. Comprehensive Demonstration Study. The purpose of the comprehensive demonstration study ("study") is to characterize impingement mortality and entrainment, to describe the operation of your cooling water intake structures, and to confirm that the technologies, operational measures, and/or restoration measures you have selected and installed, or will install, at your facility meet the applicable

requirements of LAC 33:IX.4737. All facilities except those that have met the applicable requirements in accordance with LAC 33:IX.4737.A.1.a-b and A.4 must submit all applicable portions of the study to the state administrative authority in accordance with Paragraph A.1 of this Section. Facilities that meet the requirements in LAC 33:IX.4737.A.1.a by reducing their flow commensurate with a closed-cycle, recirculating system are not required to submit a study. Facilities that meet the requirements in LAC 33:IX.4737.A.1.b by reducing their design intake velocity to 0.5 ft/sec or less are required to submit a study only for the entrainment requirements, if applicable. Facilities that meet the requirements in LAC 33:IX.4737.A.4 and have installed and properly operate and maintain an approved design and construction technology, in accordance with LAC 33:IX.4747, are required to submit only the technology installation and operation plan in Paragraph B.4 of this Section and the verification monitoring plan in Paragraph B.7 of this Section. Facilities that are required to meet only impingement mortality performance standards in LAC 33:IX.4737.B.1 are required to submit only a study for the impingement mortality reduction requirements. The study must include the following information.

1. **Proposal For Information Collection.** You must submit to the state administrative authority for review and comment a description of the information you will use to support your study. The proposal for information must be submitted prior to the start of information collection activities, but you may initiate such activities prior to receiving comment from the state administrative authority. The proposal must include:

a. a description of the proposed and/or implemented technologies, operational measures, and/or restoration measures to be evaluated in the study;

b. a list and description of any historical studies characterizing impingement mortality and entrainment and/or the physical and biological conditions in the vicinity of the cooling water intake structures and their relevance to this proposed study. If you propose to use existing data, you must demonstrate the extent to which the data are representative of current conditions and that the data were collected using appropriate quality assurance/quality control procedures;

c. a summary of any past or ongoing consultations with appropriate federal, state, and tribal fish and wildlife agencies that are relevant to this study and a copy of written comments received as a result of such consultations; and

d. a sampling plan for any new field studies you propose to conduct in order to ensure that you have sufficient data to develop a scientifically-valid estimate of impingement mortality and entrainment at your site. The sampling plan must document all methods and quality assurance/quality control procedures for sampling and data analysis. The sampling and data analysis methods you propose must be appropriate for a quantitative survey and include consideration of the methods used in other studies performed in the source water body. The sampling plan must

include a description of the study area, including the area of influence of the cooling water intake structure, and provide a taxonomic identification of the sampled or evaluated biological assemblages, including all life stages of fish and shellfish.

2. Source Water Body Flow Information. You must submit to the state administrative authority the following source water body flow information.

a. If your cooling water intake structure is located in a freshwater river or stream, you must provide the annual mean flow of the water body and any supporting documentation and engineering calculations to support your analysis of whether your design intake flow is greater than 5 percent of the mean annual flow of the river or stream for purposes of determining applicable performance standards under Subsection B of this Section. Representative historical data (from a period of time up to 10 years, if available) must be used.

b. If your cooling water intake structure is located in a lake or a reservoir and you propose to increase its design intake flow, you must provide a description of the thermal stratification in the water body, and any supporting documentation and engineering calculations to show that the total design intake flow after the increase will not disrupt the natural thermal stratification and turnover pattern in a way that adversely impacts fisheries, including the results of any consultations with federal, state, or tribal fish and wildlife management agencies.

3. Impingement Mortality and/or Entrainment Characterization Study. You must submit to the state administrative authority an impingement mortality and/or entrainment characterization study, whose purpose is to provide information to support the development of a calculation baseline for evaluating impingement mortality and entrainment and to characterize current impingement mortality and entrainment. The impingement mortality and/or entrainment characterization study must include the following, in sufficient detail to support development of the other elements of the comprehensive demonstration study:

a. taxonomic identifications of all life stages of fish, shellfish, and any species protected under federal, state, or tribal law, including threatened or endangered species, that are in the vicinity of the cooling water intake structure and are susceptible to impingement and entrainment;

b. a characterization of all life stages of fish, shellfish, and any species protected under federal, state, or tribal law, including threatened or endangered species, identified in accordance with Subparagraph B.3.a of this Section, including a description of the abundance and temporal and spatial characteristics in the vicinity of the cooling water intake structure, based on sufficient data to characterize annual, seasonal, and diel variations in impingement mortality and entrainment (e.g., related to climate and weather differences, spawning, feeding, and water column migration). These may include historical data that are representative of the current operation of your facility and of biological conditions at the site; and

c. documentation of the current impingement mortality and entrainment of all life stages of fish, shellfish, and any species protected under federal, state, or tribal law, including threatened or endangered species, identified in accordance with Subparagraph B.3.a of this Section and an estimate of impingement mortality and entrainment to be used as the calculation baseline. The documentation may include historical data that are representative of the current operation of your facility and of biological conditions at the site. Impingement mortality and entrainment samples to support the calculations required in Clause B.4.a.iii and Subparagraph B.5.c of this Section must be collected during periods of representative operational flows for the cooling water intake structure, and the flows associated with the samples must be documented.

4. Technology and Compliance Assessment Information

a. Design and Construction Technology Plan. If you choose to use design and construction technologies and/or operational measures, in whole or in part, to meet the requirements of LAC 33:IX.4737.A.2 or 3, you must submit a design and construction technology plan to the state administrative authority for review and approval. In the plan, you must provide the capacity utilization rate for your facility, or for individual intake structures where applicable, in accordance with LAC 33:IX.4735, and provide supporting data, including the average annual net generation of the facility (in MWh) measured over a five-year period, if available, of representative operating conditions and the total net capacity of the facility (in MW), and underlying calculations. The plan must explain the technologies and/or operational measures you have in place and/or have selected to meet the requirements in LAC 33:IX.4737. Examples of potentially appropriate technologies may include, but are not limited to, wedgewire screens, fine mesh screens, fish handling and return systems, barrier nets, aquatic filter barrier systems, vertical and/or lateral relocation of the cooling water intake structure, and enlargement of the cooling water intake structure opening to reduce velocity. Examples of potentially appropriate operational measures may include, but are not limited to, seasonal shutdowns, reductions in flow, and continuous or more frequent rotation of traveling screens. The plan must contain the following information:

i. a narrative description of the design and operation of all design and construction technologies and/or operational measures, existing and proposed, including fish handling and return systems, that you have in place or will use to meet the requirements to reduce impingement mortality of those species expected to be most susceptible to impingement, and information that demonstrates the efficacy of the technologies and/or operational measures for those species;

ii. a narrative description of the design and operation of all design and construction technologies and/or operational measures, existing and proposed, that you have in place or will use to meet the requirements to reduce entrainment of those species expected to be the most

susceptible to entrainment, if applicable, and information that demonstrates the efficacy of the technologies and/or operational measures for those species;

iii. calculations of the reduction in impingement mortality and entrainment of all life stages of fish and shellfish that would be achieved by the technologies and/or operational measures you have selected based on the impingement mortality and/or entrainment characterization study in Paragraph B.3 of this Section. In determining compliance with any requirements to reduce impingement mortality or entrainment, you must assess the total reduction in impingement mortality and entrainment against the calculation baseline determined in accordance with Paragraph B.3 of this Section. Reductions in impingement mortality and entrainment from this calculation baseline as a result of any design and construction technologies and/or operational measures already implemented at your facility should be added to the reductions expected to be achieved by any additional design and/or construction technologies and operational measures that will be implemented, and any increases in fish and shellfish within the water body attributable to your restoration measures. Facilities that recirculate a portion of their flow, but do not reduce flow sufficiently to satisfy the compliance option in LAC 33:IX.4737.A.1.a, may take into account the reduction in impingement mortality and entrainment associated with the reduction in flow when determining the net reduction associated with existing design and construction technologies and/or operational measures. This estimate must include a site-specific evaluation of the suitability of the technologies and/or operational measures based on the species that are found at the site, and may be determined based on representative studies (i.e., studies that have been conducted at a similar facility's cooling water intake structures located in the same water body type with similar biological characteristics) and/or site-specific technology prototype or pilot studies; and

iv. design and engineering calculations, drawings, and estimates prepared by a qualified professional to support the descriptions required by Clauses B.4.a.i and ii of this Section.

b. Technology Installation and Operation Plan. If you choose the compliance alternative in LAC 33:IX.4737.A.2, 3, 4, or 5 and use design and construction technologies and/or operational measures in whole or in part to comply with the applicable requirements of LAC 33:IX.4737, you must submit the following information with your application for review and approval by the state administrative authority:

i. a schedule for the installation and maintenance of any new design and construction technologies. Any downtime of generating units to accommodate installation and/or maintenance of these technologies should be scheduled to coincide with otherwise necessary downtime (e.g., for repair, overhaul, or routine maintenance of the generating units) to the extent practicable. Where additional downtime is required, you may coordinate scheduling of this downtime with the North American Electric Reliability

Council and/or other generators in your area to ensure that impacts to reliability and supply are minimized;

ii. a list of operational and other parameters to be monitored, and the location at which and frequency with which you will monitor them;

iii. a list of activities you will undertake to ensure to the degree practicable the efficacy of installed design and construction technologies and operational measures, and your schedule for implementing them;

iv. a schedule and method for assessing the efficacy of any installed design and construction technologies and operational measures in meeting applicable performance standards or site-specific requirements, including an adaptive management plan for revising design and construction technologies, operational measures, operation and maintenance requirements, and/or monitoring requirements if your assessment indicates that applicable performance standards or site-specific requirements are not being met; and

v. if you choose the compliance alternative in LAC 33:IX.4737A.4, documentation that the appropriate site conditions in LAC 33:IX.4747.A or B exist at your facility.

5. Restoration Plan. If you propose to use restoration measures, in whole or in part, to meet the applicable requirements in LAC 33:IX.4737, you must address species of concern identified in consultation with federal, state, and tribal fish and wildlife management agencies with responsibility for fisheries and wildlife potentially affected by your cooling water intake structure. The following information must be submitted with your application for review and approval by the state administrative authority.

a. You must provide a demonstration to the state administrative authority that you have evaluated the use of design and construction technologies and/or operational measures for your facility and an explanation of how you determined that restoration would be more feasible, cost-effective, or environmentally desirable.

b. You must provide a narrative description of the design and operation of all restoration measures, existing and proposed, that you have in place or will use to produce fish and shellfish.

c. You must provide a quantification of the ecological benefits of the proposed restoration measures. You must use information from the impingement mortality and/or entrainment characterization study required in Paragraph B.3 of this Section, and any other available and appropriate information, to estimate the reduction in fish and shellfish impingement mortality and/or entrainment that would be necessary for your facility to comply with LAC 33:IX.4737.C.2. You must then calculate the production of fish and shellfish that you will achieve with the restoration measures you will or have already installed. You must include a discussion of the nature and magnitude of uncertainty associated with the performance of these restoration measures. You must also include a discussion of

the time frame within which these ecological benefits are expected to accrue.

d. You must design calculations, drawings, and estimates to document that your proposed restoration measures in combination with design and construction technologies and/or operational measures, or alone, will meet the requirements of LAC 33:IX.4737.C.2. If the restoration measures address the same fish and shellfish species identified in the impingement mortality and/or entrainment characterization study (in-kind restoration), you must demonstrate that the restoration measures will produce a level of these fish and shellfish substantially similar to that which would result from meeting applicable performance standards in LAC 33:IX.4737.B, or that they will satisfy site-specific requirements established in accordance with LAC 33:IX.4737.A.5. If the restoration measures address fish and shellfish species different from those identified in the impingement mortality and/or entrainment characterization study (out-of-kind restoration), you must demonstrate that the restoration measures produce ecological benefits substantially similar to or greater than those that would be realized through in-kind restoration. Such a demonstration should be based on a watershed approach to restoration planning and consider applicable multi-agency watershed restoration plans, site-specific peer-reviewed ecological studies, and/or consultation with appropriate federal, state, and tribal fish and wildlife management agencies.

e. You must provide a plan utilizing an adaptive management method for implementing, maintaining, and demonstrating the efficacy of the restoration measures you have selected and for determining the extent to which the restoration measures, or the restoration measures in combination with design and construction technologies and operational measures, have met the applicable requirements of LAC 33:IX.4737.C.2. The plan must include:

i. a monitoring plan that includes a list of the restoration parameters that will be monitored, the frequency with which you will monitor them, and success criteria for each parameter;

ii. a list of activities you will undertake to ensure the efficacy of the restoration measures, a description of the linkages between these activities and the items in Clause B.5.e.i of this Section, and an implementation schedule; and

iii. a process for revising the restoration plan as new information, including monitoring data, becomes available, if the applicable requirements under LAC 33:IX.4737.C.2 are not being met.

f. You must provide a summary of any past or ongoing consultation with appropriate federal, state, and tribal fish and wildlife management agencies on your use of restoration measures, including a copy of any written comments received as a result of such consultations.

g. If requested by the state administrative authority, you must provide a peer review of the items you submit for the restoration plan. You must choose the peer reviewers in

consultation with the state administrative authority, who may consult with EPA and federal, state, and tribal fish and wildlife management agencies with responsibility for fish and wildlife potentially affected by your cooling water intake structure. Peer reviewers must have appropriate qualifications (e.g., in the fields of geology, engineering, and/or biology, etc.) depending upon the materials to be reviewed.

h. You must provide a description of the information to be included in a biannual status report to the state administrative authority.

6. Information to Support Site-Specific Determination of Best Technology Available For Minimizing Adverse Environmental Impact. If you have requested a site-specific determination of best technology available for minimizing adverse environmental impact in accordance with LAC 33:IX.4737.A.5.a because of costs significantly greater than those considered by the administrator for a facility like yours in establishing the applicable performance standards of LAC 33:IX.4737.B, you must provide to the state administrative authority the information specified in Subparagraphs B.6.a and c of this Section. If you have requested a site-specific determination of best technology available for minimizing adverse environmental impact in accordance with LAC 33:IX.4737.A.5.b because of costs significantly greater than the benefits of meeting the applicable performance standards of LAC 33:IX.4737.B at your facility, you must provide the information specified in Subparagraphs B.6.a and c of this Section.

a. Comprehensive Cost Evaluation Study. You must perform and submit the results of a comprehensive cost evaluation study that includes:

i. engineering cost estimates in sufficient detail to document the costs of implementing design and construction technologies, operational measures, and/or restoration measures at your facility that would be needed to meet the applicable performance standards of LAC 33:IX.4737.B;

ii. a demonstration that the costs documented in Clause B.6.a.i of this Section significantly exceed either those considered by the administrator for a facility like yours in establishing the applicable performance standards or the benefits of meeting the applicable performance standards at your facility; and

iii. engineering cost estimates in sufficient detail to document the costs of implementing the design and construction technologies, operational measures, and/or restoration measures in your site-specific technology plan developed in accordance with Subparagraph B.6.c of this Section.

b. Benefits Valuation Study. If you are seeking a site-specific determination of best technology available for minimizing adverse environmental impact because of costs significantly greater than the benefits of meeting the applicable performance standards of LAC 33:IX.4737.B at your facility, you must use a comprehensive method to fully

value the impacts of impingement mortality and entrainment at your site and the benefits achievable by meeting the applicable performance standards. In addition to the valuation estimates, the benefit study must include the following:

- i. a description of the method used to value commercial, recreational, and ecological benefits, including any non-use benefits, if applicable;
- ii. documentation of the basis for any assumptions and quantitative estimates. If you plan to use an entrainment survival rate other than zero, you must submit a determination of entrainment survival at your facility based on a study approved by the state administrative authority;
- iii. an analysis of the effects of significant sources of uncertainty on the results of the study; and
- iv. if requested by the state administrative authority, a peer review of the items you submit in the benefits valuation study. You must choose the peer reviewers in consultation with the state administrative authority, who may consult with EPA and federal, state, and tribal fish and wildlife management agencies with responsibility for fish and wildlife potentially affected by your cooling water intake structure. Peer reviewers must have appropriate qualifications depending upon the materials to be reviewed; and
- v. a narrative description of any non-monetized benefits that would be realized at your site if you were to meet the applicable performance standards, and a qualitative assessment of their magnitude and significance.

c. **Site-Specific Technology Plan.** Based on the results of the comprehensive cost evaluation study required by Subparagraph B.6.a of this Section, and the benefits valuation study required by Subparagraph B.6.b of this Section, if applicable, you must submit a site-specific technology plan to the state administrative authority for review and approval. The plan must contain the following information:

- i. a narrative description of the design and operation of all existing and proposed design and construction technologies, operational measures, and/or restoration measures that you have selected in accordance with LAC 33:IX.4737.A.5;
- ii. an engineering estimate of the efficacy of the proposed and/or implemented design and construction technologies or operational measures, and/or restoration measures. This estimate must include a site-specific evaluation of the suitability of the technologies or operational measures for reducing impingement mortality and/or entrainment, as applicable, of all life stages of fish and shellfish based on representative studies (e.g., studies that have been conducted at cooling water intake structures located in the same water body type with similar biological characteristics) and, if applicable, site-specific technology prototype or pilot studies. If restoration measures will be used, you must provide a restoration plan that includes the elements described in Paragraph B.5 of this Section;

- iii. a demonstration that the proposed and/or implemented design and construction technologies, operational measures, and/or restoration measures achieve an efficacy that is as close as practicable to the applicable performance standards of LAC 33:IX.4737.B without resulting in costs significantly greater than either the costs considered by the administrator for a facility like yours in establishing the applicable performance standards or, as appropriate, the benefits of complying with the applicable performance standards at your facility; and

- iv. design and engineering calculations, drawings, and estimates prepared by a qualified professional to support the elements of the plan.

7. **Verification Monitoring Plan.** If you comply using compliance alternatives in LAC 33:IX.4737.A.2, 3, 4, or 5 using design and construction technologies and/or operational measures, you must submit a plan to conduct, at a minimum, two years of monitoring to verify the full-scale performance of the proposed or already-implemented technologies and/or operational measures. The verification study must begin once the design and construction technologies and/or operational measures are installed and continue for a period of time that is sufficient to demonstrate to the state administrative authority whether the facility is meeting the applicable performance standards in LAC 33:IX.4737.B or site-specific requirements developed in accordance with LAC 33:IX.4737.A.5. The plan must provide the following:

- a. a description of the frequency and duration of monitoring, the parameters to be monitored, and the basis for determining the parameters and the frequency and duration for monitoring. The parameters selected and duration and frequency of monitoring must be consistent with any method for assessing success in meeting applicable performance standards in your technology installation and operation plan as required by Subparagraph B.4.b of this Section;

- b. a proposal on how naturally moribund fish and shellfish that enter the cooling water intake structure would be identified and taken into account in assessing success in meeting the performance standards in LAC 33:IX.4737.B; and

- c. a description of the information to be included in a biannual status report to the state administrative authority.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular Section 2074(B)(3) and (B)(4).

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Environmental Assessment, LR 31:432 (February 2005).

§4741. As an owner or operator of a Phase II existing facility, what monitoring must I perform?

A. As an owner or operator of a Phase II existing facility, you must perform monitoring, as applicable, in accordance with the technology installation and operation plan required by LAC 33:IX.4739.B.4.b, the restoration plan required by LAC 33:IX.4739.B.5, the verification monitoring plan required by LAC 33:IX.4739.B.7, and any additional

monitoring specified by the state administrative authority to demonstrate compliance with the applicable requirements of LAC 33:IX.4737.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular Section 2074(B)(3) and (B)(4).

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Environmental Assessment, LR 31:436 (February 2005).

§4743. As an owner or operator of a Phase II existing facility, what records must I keep and what information must I report?

A. As an owner or operator of a Phase II existing facility you must keep records and report information and data to the state administrative authority as follows.

1. You must keep records of all the data used to complete the permit application and show compliance with the requirements of LAC 33:IX.4737, any supplemental information developed under LAC 33:IX.4739, and any compliance monitoring data submitted under LAC 33:IX.4741, for a period of at least three years from date of permit issuance. The state administrative authority may require that these records be kept for a longer period.

2. You must submit a status report to the state administrative authority for review every two years that includes appropriate monitoring data and other information as specified by the state administrative authority in accordance with LAC 33:IX.4745.B.5.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular Section 2074(B)(3) and (B)(4).

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Environmental Assessment, LR 31:436 (February 2005).

§4745. As the state administrative authority, what must I do to comply with the requirements of this Subchapter?

A. Permit Application. As the state administrative authority, you must review materials submitted by the applicant under LAC 33:IX.2501.R and LAC 33:IX.4739 before each permit renewal or reissuance.

1. You must review and comment on the proposal for information collection submitted by the facility in accordance with LAC 33:IX.4739.A.1. You are encouraged to provide comments expeditiously so that the permit applicant can make responsive modifications to its information gathering activities. If a facility submits a request in accordance with LAC 33:IX.4739.A.2.b for an alternate schedule for submitting the information required in LAC 33:IX.4739, you must approve a schedule that is as expeditious as practicable, but does not extend beyond January 7, 2008. If a facility submits a request in accordance with LAC 33:IX.4739.A.3 to reduce the information about its cooling water intake structures and the source water body required to be submitted in its permit application, other than with the first permit application after September 7, 2004, you must approve the request within 60 days if conditions at

the facility and in the water body remain substantially unchanged since the previous application.

2. After receiving the permit application from the owner or operator of a Phase II existing facility, you must determine which of the requirements specified in LAC 33:IX.4737 apply to the facility. In addition, you must review materials to determine compliance with the applicable requirements.

3. At each permit renewal, you must review the application materials and monitoring data to determine whether new or revised requirements for design and construction technologies, operational measures, or restoration measures should be included in the permit to meet the applicable performance standards in LAC 33:IX.4737.B or alternative site-specific requirements established in accordance with LAC 33:IX.4747.A.5.

B. Permitting Requirements. Section 316(b) (of the CWA) requirements are implemented for a facility through an LPDES permit. As the state administrative authority, you must consider the information submitted by the Phase II existing facility in its permit application, and determine the appropriate requirements and conditions to include in the permit based on the compliance alternatives in LAC 33:IX.4737.A. The following requirements must be included in each permit.

1. Cooling Water Intake Structure Requirements. The permit conditions must include the requirements that implement the applicable provisions of LAC 33:IX.4737. You must evaluate the performance of the design and construction technologies, operational measures, and/or restoration measures proposed and implemented by the facility and require additional or different design and construction technologies, operational measures, and/or restoration measures, and/or improved operation and maintenance of existing technologies and measures, if needed to meet the applicable performance standards, restoration requirements, or alternative site-specific requirements. In determining compliance with the performance standards for facilities proposing to increase withdrawals of cooling water from a lake or a reservoir in accordance with LAC 33:IX.4737.B.3, you must consider anthropogenic factors (those not considered "natural") unrelated to the Phase II existing facility's cooling water intake structures that can influence the occurrence and location of a thermocline. These include source water inflows, other water withdrawals, managed water uses, wastewater discharges, and flow/level management practices (e.g., some reservoirs release water from deeper bottom layers). As the state administrative authority, you must coordinate with appropriate federal, state, or tribal fish and wildlife management agencies to determine if any disruption of the natural thermal stratification resulting from the proposed increased withdrawal of cooling water adversely affects the management of fisheries.

a. You must review and approve the design and construction technology plan required in LAC 33:IX.4739.B.4 to evaluate the suitability and feasibility of

the design and construction technologies and/or operational measures proposed to meet the performance standards in LAC 33:IX.4737.B or site-specific requirements developed in accordance with LAC 33:IX.4737.A.5.

b. If the facility proposes restoration measures in accordance with LAC 33:IX.4737.C, you must review and approve the restoration plan required under LAC 33:IX.4739.B.5 to determine whether the proposed measures, alone or in combination with design and construction technologies and/or operational measures, will meet the requirements under LAC 33:IX.4737.C.

c. In each reissued permit, you must include a condition in the permit requiring the facility to reduce impingement mortality and entrainment, or to increase fish production, if applicable, commensurate with the efficacy at the facility of the installed design and construction technologies, operational measures, and/or restoration measures.

d. If the facility implements design and construction technologies and/or operational measures and requests that compliance with the requirements in LAC 33:IX.4737 be measured for the first permit term, or subsequent permit terms, if applicable, employing the technology installation and operation plan in accordance with LAC 33:IX.4739.B.4.b, you must review the technology installation and operation plan to ensure that it meets the requirements of LAC 33:IX.4739.B.4.b. If the technology installation and operation plan meets the requirements of LAC 33:IX.4739.B.4.b, you must approve the technology installation and operation plan and require the facility to meet the terms of the plan including any revision to the plan that may be necessary if applicable performance standards or alternative site-specific requirements are not being met. If the facility implements restoration measures and requests that compliance with the requirements in LAC 33:IX.4737 be measured for the first permit term, or subsequent permit terms, if applicable, employing a restoration plan in accordance with LAC 33:IX.4739.B.5, you must review the restoration plan to ensure it meets the requirements of LAC 33:IX.4739.B.5. If the restoration plan meets the requirements of LAC 33:IX.4739.B.5, you must approve the plan and require the facility to meet the terms of the plan including any revision to the plan that may be necessary if applicable performance standards or site-specific requirements are not being met. In determining whether to approve a technology installation and operation plan or restoration plan, you must evaluate whether the design and construction technologies, operational measures, and/or restoration measures the facility has installed, or proposes to install, can reasonably be expected to meet the applicable performance standards in LAC 33:IX.4737.B, restoration requirements in LAC 33:IX.4737.C.2, and/or alternative site-specific requirements established in accordance with LAC 33:IX.4737.A.5, and whether the technology installation and operation plan and/or the restoration plan complies with the applicable requirements of LAC 33:IX.4739.B. In reviewing the technology installation and operation plan, you must approve any reasonable scheduling

provisions that are designed to ensure that impacts to energy reliability and supply are minimized, in accordance with LAC 33:IX.4739.B.4.b.i. If the facility does not request that compliance with the requirements in LAC 33:IX.4737 be measured employing a technology installation and operation plan and/or a restoration plan, or the facility has not been in compliance with the terms of its current technology installation and operation plan and/or restoration plan during the preceding permit term, you must require the facility to comply with the applicable performance standards in LAC 33:IX.4737.B, restoration requirement in LAC 33:IX.4737.C.2, and/or alternative site-specific requirements developed in accordance with LAC 33:IX.4737.A.5. In considering a permit application, you must review the performance of the design and construction technologies, operational measures, and/or restoration measures implemented and require additional or different design and construction technologies, operational measures, and/or restoration measures, and/or improved operation and maintenance of existing technologies and measures, if needed to meet the applicable performance standards, restoration requirements, and/or alternative site-specific requirements.

e. You must review and approve the proposed verification monitoring plan submitted under LAC 33:IX.4739.B.7 for design and construction technologies, and/or monitoring provisions of the restoration plan submitted under LAC 33:IX.4739.B.5.e, and require that the monitoring continue for a sufficient period of time to demonstrate whether the design and construction technologies, operational measures, and/or restoration measures meet the applicable performance standards in LAC 33:IX.4737.B, restoration requirements in LAC 33:IX.4737.C.2, and/or site-specific requirements established in accordance with LAC 33:IX.4737.A.5.

f. If a facility requests requirements based on a site-specific determination of best technology available for minimizing adverse environmental impact, you must review the application materials submitted under LAC 33:IX.4739.B.6 and any other information you may have, including quantitative and qualitative benefits, that would be relevant to a determination of whether alternative requirements are appropriate for the facility. If a facility submits a study to support entrainment survival at the facility, you must review and approve the results of that study. If you determine that alternative requirements are appropriate, you must make a site-specific determination of best technology available for minimizing adverse environmental impact in accordance with LAC 33:IX.4737.A.5. You, as the state administrative authority, may request revisions to the information submitted by the facility in accordance with LAC 33:IX.4739.B.6 if it does not provide an adequate basis for you to make this determination. Any alternative site-specific requirements established based on new and/or existing design and construction technologies, operational measures, and/or restoration measures, must achieve an efficacy that is, in your judgment, as close as practicable to the applicable performance standards of LAC 33:IX.4737.B without

resulting in costs that are significantly greater than the costs considered by the state administrative authority for a like facility in establishing the applicable performance standards in LAC 33:IX.4737, determined in accordance with LAC 33:IX.4737.A.5.a.i-vi, or the benefits of complying with the applicable performance standards at the facility.

g. You must review the proposed methods for assessing success in meeting applicable performance standards and/or restoration requirements submitted by the facility under LAC 33:IX.4739.B.4.b.iv and/or B.5.e.i, evaluate those and other available methods, and specify how assessment of success in meeting the performance standards and/or restoration requirements will be determined, including the averaging period for determining the percent reduction in impingement mortality and entrainment and/or the production of fish and shellfish. Compliance for facilities that request that compliance be measured employing a technology installation and operation plan and/or restoration plan will be determined in accordance with Subparagraph B.1.d of this Section.

2. **Monitoring Conditions.** You must require the facility to perform monitoring in accordance with the technology installation and operation plan in LAC 33:IX.4739.B.4.b, the restoration plan required by LAC 33:IX.4739.B.5, if applicable, and the verification monitoring plan required by LAC 33:IX.4739.B.7. In determining any additional applicable monitoring requirements in accordance with LAC 33:IX.4741, you must consider the monitoring facility's verification monitoring, technology installation and operation, and/or restoration plans, as appropriate. You may modify the monitoring program based on changes in physical or biological conditions in the vicinity of the cooling water intake structure.

3. **Recordkeeping and Reporting.** At a minimum, the permit must require the facility to report and keep records specified in LAC 33:IX.4743.

4. Design and Construction Technology Approval

a. For a facility that chooses to demonstrate that it has installed and can properly operate and maintain a design and construction technology approved in accordance with LAC 33:IX.4747, the state administrative authority must review and approve the information submitted in the technology installation and operation plan in LAC 33:IX.4739.B.4.b and determine if it meets the criteria in LAC 33:IX.4747.

b. If a person requests approval of a technology under LAC 33:IX.4747.B, the state administrative authority must review and approve the information submitted and determine its suitability for widespread use at facilities with similar site conditions in its jurisdiction with minimal study. As the state administrative authority, you must evaluate the adequacy of the technology when installed in accordance with the required design criteria and site conditions to consistently meet the performance standards in LAC 33:IX.4737. You, as the state administrative authority, may

only approve a technology following public notice and consideration of comment regarding such approval.

5. **Biannual Status Report.** You must specify monitoring data and other information to be included in a status report every two years. The other information may include operation and maintenance records, summaries of adaptive management activities, or any other information that is relevant to determining compliance with the terms of the facility's technology operation and installation plan and/or restoration plan.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular Section 2074(B)(3) and (B)(4).

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Environmental Assessment, LR 31:436 (February 2005).

§4747. What are approved design and construction technologies?

A. The following technologies constitute approved design and construction technologies for purposes of LAC 33:IX.4737.A.4:

1. submerged cylindrical wedge-wire screen technology, if you meet the following conditions:

a. your cooling water intake structure is located in a freshwater river or stream;

b. your cooling water intake structure is situated such that sufficient ambient counter currents exist to promote cleaning of the screen face;

c. your maximum through-screen design intake velocity is 0.5 ft/s or less;

d. the slot size is appropriate for the size of eggs, larvae, and juveniles of all fish and shellfish to be protected at the site; and

e. your entire main condenser cooling water flow is directed through the technology. Small flows totaling less than 2 MGD for auxiliary plant cooling uses are excluded from this provision;

2. a technology that has been approved in accordance with the process described in Paragraph B of this Section.

B. You or any other interested person may submit a request to the state administrative authority that a technology be approved in accordance with the compliance alternative in LAC 33:IX.4737.A.4 after providing the public with notice and an opportunity to comment on the request for approval of the technology. If the state administrative authority approves the technology, it may be used by all facilities with similar site conditions under the state administrative authority's jurisdiction. Requests for approval of a technology must be submitted to the state administrative authority and include the following information:

1. a detailed description of the technology;

2. a list of design criteria for the technology and site characteristics and conditions that each facility must have in order to ensure that the technology can consistently meet the

appropriate impingement mortality and entrainment performance standards in LAC 33:IX.4737.B; and

3. information and data sufficient to demonstrate that facilities under the jurisdiction of the state administrative authority can meet the applicable impingement mortality and entrainment performance standards in LAC 33:IX.4737.B if the applicable design criteria and site characteristics and conditions are present at the facility.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular Section 2074(B)(3) and (B)(4).

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Environmental Assessment, LR 31:438 (February 2005).

Chapter 59. Secondary Treatment under the LPDES Program

§5911. Treatment Equivalent to Secondary Treatment

This Section describes the minimum level of effluent quality attainable by facilities eligible for treatment equivalent to secondary treatment (LAC 33:IX.5903. *Facilities Eligible for Treatment Equivalent to Secondary Treatment*) in terms of the parameters BOD₅, TSS, and pH. All requirements for the specified parameters in LAC 33:IX.5911.A, B, and C shall be achieved except as provided for in LAC 33:IX.5907, or 5911.D, E, or F.

A. – C. ...

D. Alternative State Requirements. Except as limited by LAC 33:IX.5911.F, and after notice and opportunity for public comment, the state administrative authority, subject to EPA approval, is authorized to adjust the minimum levels of effluent quality set forth in LAC 33:IX.5911.A.1-2, and B.1-

2 for trickling filter facilities and in LAC 33:IX.5911.A.1-2 for waste stabilization pond facilities, to conform to the BOD₅ and TSS effluent concentrations consistently achievable through proper operation and maintenance (LAC 33:IX.5903) by the median (50th percentile) facility in a representative sample of facilities within the state or appropriate contiguous geographical area that meet the definition of facilities eligible for treatment equivalent to secondary treatment (LAC 33:IX.5903).

E. – F.2. ...

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular Section 2074(B)(3) and (B)(4).

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Water Resources, LR 21:945 (September 1995), amended by the Water Pollution Control Division, LR 23:726 (June 1997), repromulgated by the Office of Environmental Assessment, Environmental Planning Division, LR 30:232 (February 2004), amended by the Office of Environmental Assessment, LR 31:439 (February 2005).

Chapter 71. Appendices

§7103. Appendix B—Criteria for Determining a Concentrated Animal Feeding Operation— Reserved

Repealed and Reserved.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular Section 2074(B)(3) and (B)(4).

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Water Resources, LR 21:945 (September 1995), repromulgated by the Office of Environmental Assessment, Environmental Planning Division, LR 30:233 (February 2004), repealed by the Office of Environmental Assessment, LR 31:439 (February 2005).

Title 33

ENVIRONMENTAL QUALITY

Part XV. Radiation Protection

Chapter 1. General Provisions

§102. Definitions and Abbreviations

As used in these regulations, these terms have the definitions set forth below. Additional definitions used only in a certain chapter may be found in that chapter.

* * *

A_2 —the maximum activity of radioactive material, other than special form, LSA, and SCO material, permitted in a Type A package. These values are either listed in, or may be derived in accordance with the procedure prescribed in, Appendix A of 10 CFR Part 71.

* * *

Rem—a measure of the dose of any radiation to body tissue in terms of its estimated biological effect relative to a dose received from an exposure to one Roentgen (R) of X-rays. One millirem (mRem) is equal to 0.001 Rem. Rem is a special unit of dose equivalent. (See *dose equivalent*.) For the purpose of these regulations, any of the following is considered to be equivalent to a dose of one Rem:

1. - 4. ...

[NOTE: If it is more convenient to measure the neutron flux, or equivalent, than to determine the neutron absorbed dose in rads, one Rem of neutron radiation may, for purposes of these regulations, be assumed to be equivalent to 14 million (1.4×10^7) neutrons per square centimeter incident upon the body; or, if there exists sufficient information to estimate with reasonable accuracy the approximate distribution in energy of the neutrons, the incident number of neutrons per square centimeter equivalent to one Rem may be estimated from the table in LAC 33:XV.199.Appendix A.]

* * *

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January 1992), LR 19:1421 (November 1993), LR 20:650 (June 1994), LR 22:967 (October 1996), LR 24:2089 (November 1998), repromulgated LR 24:2242 (December 1998), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2563 (November 2000), LR 26:2767 (December 2000), LR 30:1171, 1188 (June 2004), amended by the Office of Environmental Assessment, LR 31:44 (January 2005).

§113. Appeal Procedure, Administrative Review

A. ...

B. Applications to Request a Hearing

1. Any person who alleges that he or she has been aggrieved by the final actions or decision of the department or administrative authority may make application to the administrative authority, in writing, within 30 days after the

occurrence of the alleged grievance or 30 days after the promulgation of any directive, order, decision or other written decision or declaration of the administrative authority.

B.2. - F. ...

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January 1992), LR 19:1421 (November 1993), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2564 (November 2000), amended by the Office of Environmental Assessment, LR 31:44 (January 2005).

Chapter 3. Licensing of Radioactive Material

Subchapter D. Specific Licenses

§325. General Requirements for the Issuance of Specific Licenses

A. - C.5.a. ...

b. persons authorized to possess no more than 1,000 times the quantity specified in LAC 33:XV.399.Appendix D or a combination of radioactive material listed therein as given in LAC 33:XV.399.Appendix D;

C.5.c. - D. ...

1. Each applicant for a specific license authorizing the possession and use of unsealed radioactive material of half-life greater than 120 days and in quantities exceeding 10^5 times the applicable quantities set forth in LAC 33:XV.399.Appendix D shall submit a decommissioning funding plan as described in Paragraph D.5 of this Section. The decommissioning funding plan must also be submitted when a combination of isotopes is involved if R divided by 10^5 is greater than one (unity rule), where R is defined here as the sum of the ratios of the quantity of each isotope to the applicable value in LAC 33:XV.399.Appendix D.

2. Each applicant for a specific license authorizing possession and use of radioactive material of half-life greater than 120 days and in quantities specified in Paragraph D.4 of this Section shall either:

2.a. - 3.d. ...

4. The following table lists required amounts of financial assurance for decommissioning by quantity of material.

a.	Greater than 10^4 but less than or equal to 10^5 times the applicable quantities of LAC 33:XV.399.Appendix D in unsealed form (for a combination of isotopes, if R , as defined in Paragraph D.1 of this Section, divided by 10^4 is greater than 1 but R divided by 10^5 is less than or equal to 1).	\$750,000
b.	Greater than 10^5 but less than or equal	\$150,000

to 10^4 times the applicable quantities of LAC 33:XV.399.Appendix D in unsealed form (for a combination of isotopes, if R, as defined in Paragraph D.1 of this Section, divided by 10^3 is greater than 1 but R divided by 10^4 is less than or equal to 1).	
c. Greater than 10^{10} times the applicable quantities of LAC 33:XV.399.Appendix D in sealed sources or plated foils (for a combination of isotopes, if R, as defined in Paragraph D.1 of this Section, divided by 10^{10} is greater than 1).	\$75,000

5. - 7.d.iv. ...

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January 1992), LR 23:1140 (September 1997), LR 24:2091 (November 1998), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:1018 (May 2000), LR 26:2568 (November 2000), LR 27:1227 (August 2001), amended by the Office of Environmental Assessment, LR 31:44 (January 2005).

§326. Special Requirements for Issuance of Certain Specific Licenses for Radioactive Material

A. - E.1.g. ...

h. The applicant submits the qualifications of the individual designated as the radiation safety officer (RSO) as described in LAC 33:XV.573.E.

i. - k. ...

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January 1992), LR 24:2092 (November 1998), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2569 (November 2000), LR 27:1228 (August 2001), LR 30:1188 (June 2004), amended by the Office of Environmental Assessment, LR 31:45 (January 2005).

§351. Financial Assurance Arrangements

A. ...

1. the amount of funds to be ensured by such assurance arrangements shall be based on the quantity of radioactive material of half-life greater than 120 days that the licensee is authorized to use and possess;

A.2. - E. ...

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January

1992), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2573 (November 2000), LR 27:1228 (August 2001), amended by the Office of Environmental Assessment, LR 31:45 (January 2005).

§361. Registration of Product Information

A. Any manufacturer or initial distributor of a sealed source or a device containing a sealed source whose product is intended for use under a specific license may submit a request to the department for evaluation of radiation safety information about its product and for its registration.

B. The request for review must be sent by an appropriate method to the Office of Environmental Services, Permits Division.

C. The request for review of a sealed source or a device must include sufficient information about the design, manufacture, prototype testing, quality control program, labeling, proposed uses, and leak testing. For a device, the request must also include sufficient information about installation, service and maintenance, operating and safety instructions, and its potential hazards, to provide reasonable assurance that the radiation safety properties of the source or device are adequate to protect health and minimize danger to life and property.

D. The department normally evaluates a sealed source or a device using radiation safety criteria in accepted industry standards. If these standards and criteria do not readily apply to a particular case, the department formulates reasonable standards and criteria with the help of the manufacturer or distributor. The department shall use criteria and standards sufficient to ensure that the radiation safety properties of the device or sealed source are adequate to protect health and minimize danger to life and property.

E. After completion of the evaluation, the department issues a certificate of registration to the person making the request. The certificate of registration acknowledges the availability of the submitted information for inclusion in an application for a specific license proposing use of the product.

F. The person submitting the request for evaluation and registration of safety information about the product shall manufacture and distribute the product in accordance with:

1. the statements and representations, including quality control program, contained in the request; and
2. the provisions of the registration certificate.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Environmental Assessment, LR 31:45 (January 2005).

Subchapter Z. Appendices

§399. Schedules A and B, and Appendices A, B, C, D

Schedule A. - Schedule B. ...

Appendix A			
Financial Assurance Arrangements			
Recommended Amounts for Mitigation, Liability, and Decommissioning			
By Title	Clean up	Third Party &/or Off-Site Damages	Decommissioning
A. Licensees 1. Manufacturing & Distribution 2. Radiography 3. Gauges 4. Well Logging 5. Nuclear Medicine 6. Rad. Therp. 7. Acad. 8. R & D 9. Instru. Calib. 10. Irradiators 11. Ind. other than gauges 12. Consultants 13. General Lic. 14. Others not listed in category A	As determined by the chosen method	As determined by the chosen method	For Category A as a whole by quantity of material (Q): 1. $Q > 10^{10}$ x LAC 33:XV.399.Appendix D, as sealed sources = \$75,000. 2. $(10^4 \times \text{LAC 33:XV.399.Appendix D, unsealed sources}) \geq Q > (10^3 \times \text{LAC 33:XV.399.Appendix D, unsealed sources})$, or 10-100 mCi source materials, dispersible form = \$150,000. 3. $(10^5 \times \text{LAC 33:XV.399.Appendix D, unsealed sources}) \geq Q > (10^4 \times \text{LAC 33:XV.399.Appendix D, unsealed sources}) = \$750,000$.
B. Low Quantity 1. In Vitro 2. Gas Chromatograph 3. Greater than or Equal to 100 x to 1000 x Exempt Quantity 4. Unsealed, discrete alpha emitters, 10 μ Ci total 5. Check sources of sufficient quantity to require leak testing	As determined by the chosen method	As determined by the chosen method	NA for this category.

Appendix B. - Appendix C.Footnote 2. ...

Appendix D	
Quantities For Use With Decommissioning	
Material	Microcurie*
Americium-241	0.01
Antimony-122	100
Antimony-124	10
Antimony-125	10
Arsenic-73	100
Arsenic-74	10
Arsenic-76	10
Arsenic-77	100
Barium-131	10
Barium-133	10
Barium-140	10
Bismuth-210	1
Bromine-82	10
Cadmium-109	10
Cadmium-115m	10
Cadmium-115	100
Calcium-45	10
Calcium-47	10
Carbon-14	100
Cerium-141	100
Cerium-143	100
Cerium-144	1
Cesium-131	1,000
Cesium-134m	100
Cesium-134	1
Cesium-135	10
Cesium-136	10
Cesium-137	10
Chlorine-36	10
Chlorine-38	10
Chromium-51	1,000
Cobalt-58m	10
Cobalt-58	10
Cobalt-60	1
Copper-64	100
Dysprosium-165	10
Dysprosium-166	100
Erbium-169	100
Erbium-171	100
Europium-152 (9.2h)	100
Europium-152 (13yr)	1
Europium-154	1
Europium-155	10
Fluorine-18	1,000
Gadolinium-153	10
Gadolinium-159	100
Gallium-72	10
Germanium-71	100
Gold-198	100
Gold-199	100
Hafnium-181	10
Holmium-166	100
Hydrogen-3	1,000
Indium-113m	100
Indium-114m	10
Indium-115m	100
Indium-115	10
Iodine-125	1
Iodine-126	1
Iodine-129	0.1
Iodine-131	1
Iodine-132	10
Iodine-133	1
Iodine-134	10

Appendix D	
Quantities For Use With Decommissioning	
Material	Microcurie*
Iodine-135	10
Iridium-192	10
Iridium-194	100
Iron-55	100
Iron-59	10
Krypton-85	100
Krypton-87	10
Lanthanum-140	10
Lutetium-177	100
Manganese-52	10
Manganese-54	10
Manganese-56	10
Mercury-197m	100
Mercury-197	100
Mercury-203	10
Molybdenum-99	100
Neodymium-147	100
Neodymium-149	100
Nickel-59	100
Nickel-63	10
Nickel-65	100
Niobium-93m	10
Niobium-95	10
Niobium-97	10
Osmium-185	10
Osmium-191m	100
Osmium-191	100
Osmium-193	100
Palladium-103	100
Palladium-109	100
Phosphorus-32	10
Platinum-191	100
Platinum-193m	100
Platinum-193	100
Platinum-197m	100
Platinum-197	100
Plutonium-239	0.01
Polonium-210	0.1
Potassium-42	10
Praseodymium-142	100
Praseodymium-143	100
Promethium-147	10
Promethium-149	10
Radium-226	0.01
Rhenium-186	100
Rhenium-188	100
Rhodium-103m	100
Rhodium-105	100
Rubidium-86	10
Rubidium-87	10
Ruthenium-97	100
Ruthenium-103	10
Ruthenium-105	10
Ruthenium-106	1
Samarium-151	10
Samarium-153	100
Scandium-46	10
Scandium-47	100
Scandium-48	10
Selenium-75	10
Silicon-31	100
Silver-105	10
Silver-110m	1
Silver-111	100

Appendix D	
Quantities For Use With Decommissioning	
Material	Microcurie *
Sodium-22	10
Sodium-24	10
Strontium-85	10
Strontium-89	1
Strontium-90	0.1
Strontium-91	10
Strontium-92	10
Sulfur-35	100
Tantalum-182	10
Technetium-96	10
Technetium-97m	100
Technetium-97	100
Technetium-99m	100
Technetium-99	10
Tellurium-125m	10
Tellurium-127m	10
Tellurium-127	100
Tellurium-129m	10
Tellurium-129	100
Tellurium-131m	10
Tellurium-132	10
Terbium-160	10
Thallium-200	100
Thallium-201	100
Thallium-202	100
Thallium-204	10
Thorium (natural)**	100
Thulium-170	10
Thulium-171	10
Tin-113	10
Tin-125	10
Tungsten-181	10
Tungsten-185	10
Tungsten-187	100
Uranium (natural)***	100
Uranium-233	0.01
Uranium-234	0.01
Uranium-235	0.01
Vanadium-48	10
Xenon-131m	1,000
Xenon-133	100
Xenon-135	100
Ytterbium-175	100
Yttrium-90	10
Yttrium-91	10
Yttrium-92	100
Yttrium-93	100
Zinc-65	10
Zinc-69m	100
Zinc-69	1,000
Zirconium-93	10
Zirconium-95	10
Zirconium-97	10
Any alpha emitting radionuclide not listed above or mixtures of alpha emitters of unknown composition	0.01
Any radionuclide other than alpha emitting radionuclides, not listed above or mixtures of beta emitters of unknown composition	0.1

* To convert μCi to kBq , multiply the μCi value by 37.

** Based on alpha disintegration rate of Th-232, Th-230 and their daughter products.

*** Based on alpha disintegration rate of U-238, U-234, and U-235.

[NOTE: This Appendix is retained for use by those agreement states that need to adopt decommissioning regulations compatible with the U.S. Nuclear Regulatory Commission.]

[NOTE: Where there is involved a combination of isotopes in known amounts, the limit for the combination should be derived as follows: Determine, for each isotope in the combination, the ratio between the quantity present in the combination and the limit otherwise established for the specific isotope when not in combination. The sum of such ratios for all the isotopes in the combination may not exceed "1" or unity.]

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January 1992), LR 20:180 (February 1994), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2574 (November 2000), LR 27:1228 (August 2001), amended by the Office of Environmental Assessment, LR 31:46 (January 2005).

Chapter 4. Standards for Protection Against Radiation

Subchapter B. Radiation Protection Programs

§421. Radiation Dose Limits for Individual Members of the Public

A. - E. ...

³Retrofit shall not be required for locations within facilities where only radiation machines existed prior to January 1, 1994, and met the previous requirements of 5 mSv (0.5 rem) in a year.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 19:1421 (November 1993), LR 22:970 (October 1996), LR 24:2095 (November 1998), repromulgated LR 24:2243 (December 1998), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2576 (November 2000), amended by the Office of Environmental Assessment, LR 31:48 (January 2005).

Subchapter Z. Appendices

§499. Appendices A, B, C, D, E

Appendix A. - Appendix B. Note 4. Example. ...

Appendix C Quantities ¹ of Licensed or Registered Sources of Radiation Requiring Labeling	
Radionuclide	Quantity (μCi)*
Hydrogen-3	1,000
Beryllium-7	1,000
Beryllium-10	1
Carbon-11	1,000
Carbon-14	100
Fluorine-18	1,000
Sodium-22	10
Sodium-24	100
Magnesium-28	100
Aluminum-26	10
Silicon-31	1,000
Silicon-32	1
Phosphorus-32	10
Phosphorus-33	100
Sulfur-35	100
Chlorine-36	10
Chlorine-38	1,000
Chlorine-39	1,000
Argon-39	1,000
Argon-41	1,000
Potassium-40	100
Potassium-42	1,000
Potassium-43	1,000
Potassium-44	1,000
Potassium-45	1,000
Calcium-41	100
Calcium-45	100
Calcium-47	100
Scandium-43	1,000
Scandium-44m	100
Scandium-44	100
Scandium-46	10
Scandium-47	100
Scandium-48	100
Scandium-49	1,000
Titanium-44	1
Titanium-45	1,000
Vanadium-47	1,000
Vanadium-48	100
Vanadium-49	1,000
Chromium-48	1,000
Chromium-49	1,000
Chromium-51	1,000
Manganese-51	1,000
Manganese-52m	1,000
Manganese-52	100
Manganese-53	1,000
Manganese-54	100
Manganese-56	1,000
Iron-52	100
Iron-55	100
Iron-59	10
Iron-60	1
Cobalt-55	100
Cobalt-56	10
Cobalt-57	100
Cobalt-58m	1,000
Cobalt-58	100

Appendix C Quantities ¹ of Licensed or Registered Sources of Radiation Requiring Labeling	
Radionuclide	Quantity (μCi)*
Cobalt-60m	1,000
Cobalt-60	1
Cobalt-61	1,000
Cobalt-62m	1,000
Nickel-56	100
Nickel-57	100
Nickel-59	100
Nickel-63	100
Nickel-65	1,000
Nickel-66	10
Copper-60	1,000
Copper-61	1,000
Copper-64	1,000
Copper-67	1,000
Zinc-62	100
Zinc-63	1,000
Zinc-65	10
Zinc-69m	100
Zinc-69	1,000
Zinc-71m	1,000
Zinc-72	100
Gallium-65	1,000
Gallium-66	100
Gallium-67	1,000
Gallium-68	1,000
Gallium-70	1,000
Gallium-72	100
Gallium-73	1,000
Germanium-66	1,000
Germanium-67	1,000
Germanium-68	10
Germanium-69	1,000
Germanium-71	1,000
Germanium-75	1,000
Germanium-77	1,000
Germanium-78	1,000
Arsenic-69	1,000
Arsenic-70	1,000
Arsenic-71	100
Arsenic-72	100
Arsenic-73	100
Arsenic-74	100
Arsenic-76	100
Arsenic-77	100
Arsenic-78	1,000
Selenium-70	1,000
Selenium-73m	1,000
Selenium-73	100
Selenium-75	100
Selenium-79	100
Selenium-81m	1,000
Selenium-81	1,000
Selenium-83	1,000
Bromine-74m	1,000
Bromine-74	1,000
Bromine-75	1,000
Bromine-76	100
Bromine-77	1,000
Bromine-80m	1,000
Bromine-80	1,000
Bromine-82	100
Bromine-83	1,000
Bromine-84	1,000
Krypton-74	1,000
Krypton-76	1,000

Appendix C Quantities ¹ of Licensed or Registered Sources of Radiation Requiring Labeling	
Radionuclide	Quantity (μCi)*
Krypton-77	1,000
Krypton-79	1,000
Krypton-81	1,000
Krypton-83m	1,000
Krypton-85m	1,000
Krypton-85	1,000
Krypton-87	1,000
Krypton-88	1,000
Rubidium-79	1,000
Rubidium-81m	1,000
Rubidium-81	1,000
Rubidium-82m	1,000
Rubidium-83	100
Rubidium-84	100
Rubidium-86	100
Rubidium-87	100
Rubidium-88	1,000
Rubidium-89	1,000
Strontium-80	100
Strontium-81	1,000
Strontium-83	100
Strontium-85m	1,000
Strontium-85	100
Strontium-87m	1,000
Strontium-89	10
Strontium-90	0.1
Strontium-91	100
Strontium-92	100
Yttrium-86m	1,000
Yttrium-86	100
Yttrium-87	100
Yttrium-88	10
Yttrium-90m	1,000
Yttrium-90	10
Yttrium-91m	1,000
Yttrium-91	10
Yttrium-92	100
Yttrium-93	100
Yttrium-94	1,000
Yttrium-95	1,000
Zirconium-86	100
Zirconium-88	10
Zirconium-89	100
Zirconium-93	1
Zirconium-95	10
Zirconium-97	100
Niobium-88	1,000
Niobium-89m (66 min)	1,000
Niobium-89 (122 min)	1,000
Niobium-90	100
Niobium-93m	10
Niobium-94	1
Niobium-95m	100
Niobium-95	100
Niobium-96	100
Niobium-97	1,000
Niobium-98	1,000
Molybdenum-90	100
Molybdenum-93m	100
Molybdenum-93	10
Molybdenum-99	100
Molybdenum-101	1,000
Technetium-93m	1,000
Technetium-93	1,000
Technetium-94m	1,000

Appendix C Quantities ¹ of Licensed or Registered Sources of Radiation Requiring Labeling	
Radionuclide	Quantity (μCi)*
Technetium-94	1,000
Technetium-96m	1,000
Technetium-96	100
Technetium-97m	100
Technetium-97	1,000
Technetium-98	10
Technetium-99m	1,000
Technetium-99	100
Technetium-101	1,000
Technetium-104	1,000
Ruthenium-94	1,000
Ruthenium-97	1,000
Ruthenium-103	100
Ruthenium-105	1,000
Ruthenium-106	1
Rhodium-99m	1,000
Rhodium-99	100
Rhodium-100	100
Rhodium-101m	1,000
Rhodium-101	10
Rhodium-102m	10
Rhodium-102	10
Rhodium-103m	1,000
Rhodium-105	100
Rhodium-106m	1,000
Rhodium-107	1,000
Palladium-100	100
Palladium-101	1,000
Palladium-103	100
Palladium-107	10
Palladium-109	100
Silver-102	1,000
Silver-103	1,000
Silver-104m	1,000
Silver-104	1,000
Silver-105	100
Silver-106m	100
Silver-106	1,000
Silver-108m	1
Silver-110m	10
Silver-111	100
Silver-112	100
Silver-115	1,000
Cadmium-104	1,000
Cadmium-107	1,000
Cadmium-109	1
Cadmium-113m	0.1
Cadmium-113	100
Cadmium-115m	10
Cadmium-115	100
Cadmium-117m	1,000
Cadmium-117	1,000
Indium-109	1,000
Indium-110m (69.1 min.)	1,000
Indium-110 (4.9h)	1,000
Indium-111	100
Indium-112	1,000
Indium-113m	1,000
Indium-114m	10
Indium-115m	1,000
Indium-115	100
Indium-116m	1,000
Indium-117m	1,000
Indium-117	1,000
Indium-119m	1,000

Appendix C Quantities ¹ of Licensed or Registered Sources of Radiation Requiring Labeling	
Radionuclide	Quantity (μCi)*
Tin-110	100
Tin-111	1,000
Tin-113	100
Tin-117m	100
Tin-119m	100
Tin-121m	100
Tin-121	1,000
Tin-123m	1,000
Tin-123	10
Tin-125	10
Tin-126	10
Tin-127	1,000
Tin-128	1,000
Antimony-115	1,000
Antimony-116m	1,000
Antimony-116	1,000
Antimony-117	1,000
Antimony-118m	1,000
Antimony-119	1,000
Antimony-120 (16min.)	1,000
Antimony-120 (5.76d)	100
Antimony-122	100
Antimony-124m	1,000
Antimony-124	10
Antimony-125	100
Antimony-126m	1,000
Antimony-126	100
Antimony-127	100
Antimony-128 (10.4min.)	1,000
Antimony-128 (9.01h)	100
Antimony-129	100
Antimony-130	1,000
Antimony-131	1,000
Tellurium-116	1,000
Tellurium-121m	10
Tellurium-121	100
Tellurium-123m	10
Tellurium-123	100
Tellurium-125m	10
Tellurium-127m	10
Tellurium-127	1,000
Tellurium-129m	10
Tellurium-129	1,000
Tellurium-131m	10
Tellurium-131	100
Tellurium-132	10
Tellurium-133m	100
Tellurium-133	1,000
Tellurium-134	1,000
Iodine-120m	1,000
Iodine-120	100
Iodine-121	1,000
Iodine-123	100
Iodine-124	10
Iodine-125	1
Iodine-126	1
Iodine-128	1,000
Iodine-129	1
Iodine-130	10
Iodine-131	1
Iodine-132m	100
Iodine-132	100
Iodine-133	10
Iodine-134	1,000
Iodine-135	100

Appendix C Quantities ¹ of Licensed or Registered Sources of Radiation Requiring Labeling	
Radionuclide	Quantity (μCi)*
Xenon-120	1,000
Xenon-121	1,000
Xenon-122	1,000
Xenon-123	1,000
Xenon-125	1,000
Xenon-127	1,000
Xenon-129m	1,000
Xenon-131m	1,000
Xenon-133m	1,000
Xenon-133	1,000
Xenon-135m	1,000
Xenon-135	1,000
Xenon-138	1,000
Cesium-125	1,000
Cesium-127	1,000
Cesium-129	1,000
Cesium-130	1,000
Cesium-131	1,000
Cesium-132	100
Cesium-134m	1,000
Cesium-134	10
Cesium-135m	1,000
Cesium-135	100
Cesium-136	10
Cesium-137	10
Cesium-138	1,000
Barium-126	1,000
Barium-128	100
Barium-131m	1,000
Barium-131	100
Barium-133m	100
Barium-133	100
Barium-135m	100
Barium-139	1,000
Barium-140	100
Barium-141	1,000
Barium-142	1,000
Lanthanum-131	1,000
Lanthanum-132	100
Lanthanum-135	1,000
Lanthanum-137	10
Lanthanum-138	100
Lanthanum-140	100
Lanthanum-141	100
Lanthanum-142	1,000
Lanthanum-143	1,000
Cerium-134	100
Cerium-135	100
Cerium-137m	100
Cerium-137	1,000
Cerium-139	100
Cerium-141	100
Cerium-143	100
Cerium-144	1
Praseodymium-136	1,000
Praseodymium-137	1,000
Praseodymium-138m	1,000
Praseodymium-139	1,000
Praseodymium-142m	1,000
Praseodymium-142	100
Praseodymium-143	100
Praseodymium-144	1,000
Praseodymium-145	100
Praseodymium-147	1,000
Neodymium-136	1,000

Appendix C Quantities ¹ of Licensed or Registered Sources of Radiation Requiring Labeling	
Radionuclide	Quantity (μCi)*
Neodymium-138	100
Neodymium-139m	1,000
Neodymium-139	1,000
Neodymium-141	1,000
Neodymium-147	100
Neodymium-149	1,000
Neodymium-151	1,000
Promethium-141	1,000
Promethium-143	100
Promethium-144	10
Promethium-145	10
Promethium-146	1
Promethium-147	10
Promethium-148m	10
Promethium-148	10
Promethium-149	100
Promethium-150	1,000
Promethium-151	100
Samarium-141m	1,000
Samarium-141	1,000
Samarium-142	1,000
Samarium-145	100
Samarium-146	1
Samarium-147	100
Samarium-151	10
Samarium-153	100
Samarium-155	1,000
Samarium-156	1,000
Europium-145	100
Europium-146	100
Europium-147	100
Europium-148	10
Europium-149	100
Europium-150 (12.62h)	100
Europium-150 (34.2y)	1
Europium-152m	100
Europium-152	1
Europium-154	1
Europium-155	10
Europium-156	100
Europium-157	100
Europium-158	1,000
Gadolinium-145	1,000
Gadolinium-146	10
Gadolinium-147	100
Gadolinium-148	0.001
Gadolinium-149	100
Gadolinium-151	10
Gadolinium-152	100
Gadolinium-153	10
Gadolinium-159	100
Terbium-147	1,000
Terbium-149	100
Terbium-150	1,000
Terbium-151	100
Terbium-153	1,000
Terbium-154	100
Terbium-155	1,000
Terbium-156m (5.0h)	1,000
Terbium-156m (24.4h)	1,000
Terbium-156	100
Terbium-157	10
Terbium-158	1
Terbium-160	10
Terbium-161	100

Appendix C Quantities ¹ of Licensed or Registered Sources of Radiation Requiring Labeling	
Radionuclide	Quantity (μCi)*
Dysprosium-155	1,000
Dysprosium-157	1,000
Dysprosium-159	100
Dysprosium-165	1,000
Dysprosium-166	100
Holmium-155	1,000
Holmium-157	1,000
Holmium-159	1,000
Holmium-161	1,000
Holmium-162m	1,000
Holmium-162	1,000
Holmium-164m	1,000
Holmium-164	1,000
Holmium-166m	1
Holmium-166	100
Holmium-167	1,000
Erbium-161	1,000
Erbium-165	1,000
Erbium-169	100
Erbium-171	100
Erbium-172	100
Thulium-162	1,000
Thulium-166	100
Thulium-167	100
Thulium-170	10
Thulium-171	10
Thulium-172	100
Thulium-173	100
Thulium-175	1,000
Ytterbium-162	1,000
Ytterbium-166	100
Ytterbium-167	1,000
Ytterbium-169	100
Ytterbium-175	100
Ytterbium-177	1,000
Ytterbium-178	1,000
Lutetium-169	100
Lutetium-170	100
Lutetium-171	100
Lutetium-172	100
Lutetium-173	10
Lutetium-174m	10
Lutetium-174	10
Lutetium-176m	1,000
Lutetium-176	100
Lutetium-177m	10
Lutetium-177	100
Lutetium-178m	1000
Lutetium-178	1,000
Lutetium-179	1,000
Hafnium-170	100
Hafnium-172	1
Hafnium-173	1,000
Hafnium-175	100
Hafnium-177m	1,000
Hafnium-178m	0.1
Hafnium-179m	10
Hafnium-180m	1,000
Hafnium-181	10
Hafnium-182m	1,000
Hafnium-182	0.1
Hafnium-183	1,000
Hafnium-184	100
Tantalum-172	1,000
Tantalum-173	1,000

Appendix C Quantities ¹ of Licensed or Registered Sources of Radiation Requiring Labeling	
Radionuclide	Quantity (μCi)*
Tantalum-174	1,000
Tantalum-175	1,000
Tantalum-176	100
Tantalum-177	1,000
Tantalum-178	1,000
Tantalum-179	100
Tantalum-180m	1,000
Tantalum-180	100
Tantalum-182m	1,000
Tantalum-182	10
Tantalum-183	100
Tantalum-184	100
Tantalum-185	1,000
Tantalum-186	1,000
Tungsten-176	1,000
Tungsten-177	1,000
Tungsten-178	1,000
Tungsten-179	1,000
Tungsten-181	1,000
Tungsten-185	100
Tungsten-187	100
Tungsten-188	10
Rhenium-177	1,000
Rhenium-178	1,000
Rhenium-181	1,000
Rhenium-182 (12.7h)	1,000
Rhenium-182 (64.0h)	100
Rhenium-184m	10
Rhenium-184	100
Rhenium-186m	10
Rhenium-186	100
Rhenium-187	1,000
Rhenium-188m	1,000
Rhenium-188	100
Rhenium-189	100
Osmium-180	1,000
Osmium-181	1,000
Osmium-182	100
Osmium-185	100
Osmium-189m	1,000
Osmium-191m	1,000
Osmium-191	100
Osmium-193	100
Osmium-194	1
Iridium-182	1,000
Iridium-184	1,000
Iridium-185	1,000
Iridium-186	100
Iridium-187	1,000
Iridium-188	100
Iridium-189	100
Iridium-190m	1,000
Iridium-190	100
Iridium-192 (73.8d)	1
Iridium-192m (1.4min.)	10
Iridium-194m	10
Iridium-194	100
Iridium-195m	1,000
Iridium-195	1,000
Platinum-186	1,000
Platinum-188	100
Platinum-189	1,000
Platinum-191	100
Platinum-193m	100
Platinum-193	1,000

Appendix C Quantities ¹ of Licensed or Registered Sources of Radiation Requiring Labeling	
Radionuclide	Quantity (μCi)*
Platinum-195m	100
Platinum-197m	1,000
Platinum-197	100
Platinum-199	1,000
Platinum-200	100
Gold-193	1,000
Gold-194	100
Gold-195	10
Gold-198m	100
Gold-198	100
Gold-199	100
Gold-200m	100
Gold-200	1,000
Gold-201	1,000
Mercury-193m	100
Mercury-193	1,000
Mercury-194	1
Mercury-195m	100
Mercury-195	1,000
Mercury-197m	100
Mercury-197	1,000
Mercury-199m	1,000
Mercury-203	100
Thallium-194m	1,000
Thallium-194	1,000
Thallium-195	1,000
Thallium-197	1,000
Thallium-198m	1,000
Thallium-198	1,000
Thallium-199	1,000
Thallium-200	1,000
Thallium-201	1,000
Thallium-202	100
Thallium-204	100
Lead-195m	1,000
Lead-198	1,000
Lead-199	1,000
Lead-200	100
Lead-201	1,000
Lead-202m	1,000
Lead-202	10
Lead-203	1,000
Lead-205	100
Lead-209	1,000
Lead-210	0.01
Lead-211	100
Lead-212	1
Lead-214	100
Bismuth-200	1,000
Bismuth-201	1,000
Bismuth-202	1,000
Bismuth-203	100
Bismuth-205	100
Bismuth-206	100
Bismuth-207	10
Bismuth-210m	0.1
Bismuth-210	1
Bismuth-212	10
Bismuth-213	10
Bismuth-214	100
Polonium-203	1,000
Polonium-205	1,000
Polonium-207	1,000
Polonium-210	0.1
Astatine-207	100

Appendix C Quantities ¹ of Licensed or Registered Sources of Radiation Requiring Labeling	
Radionuclide	Quantity (μCi)*
Astatine-211	10
Radon-220	1
Radon-222	1
Francium-222	100
Francium-223	100
Radium-223	0.1
Radium-224	0.1
Radium-225	0.1
Radium-226	0.1
Radium-227	1,000
Radium-228	0.1
Actinium-224	1
Actinium-225	0.01
Actinium-226	0.1
Actinium-227	0.001
Actinium-228	1
Thorium-226	10
Thorium-227	0.01
Thorium-228	0.001
Thorium-229	0.001
Thorium-230	0.001
Thorium-231	100
Thorium-232	100
Thorium-234	10
Thorium-natural	100
Protactinium-227	10
Protactinium-228	1
Protactinium-230	0.1
Protactinium-231	0.001
Protactinium-232	1
Protactinium-233	100
Protactinium-234	100
Uranium-230	0.01
Uranium-231	100
Uranium-232	0.001
Uranium-233	0.001
Uranium-234	0.001
Uranium-235	0.001
Uranium-236	0.001
Uranium-237	100
Uranium-238	100
Uranium-239	1,000
Uranium-240	100
Uranium-natural	100
Neptunium-232	100
Neptunium-233	1,000
Neptunium-234	100
Neptunium-235	100
Neptunium-236 (1.15x10 ⁵ y)	0.001
Neptunium-236 (22.5h)	1
Neptunium-237	0.001
Neptunium-238	10
Neptunium-239	100
Neptunium-240	1,000
Plutonium-234	10
Plutonium-235	1,000
Plutonium-236	0.001
Plutonium-237	100
Plutonium-238	0.001
Plutonium-239	0.001
Plutonium-240	0.001
Plutonium-241	0.01
Plutonium-242	0.001
Plutonium-243	1,000
Plutonium-244	0.001

Appendix C Quantities ¹ of Licensed or Registered Sources of Radiation Requiring Labeling	
Radionuclide	Quantity (μCi)*
Plutonium-245	100
Americium-237	1,000
Americium-238	100
Americium-239	1,000
Americium-240	100
Americium-241	0.001
Americium-242m	0.001
Americium-242	10
Americium-243	0.001
Americium-244m	100
Americium-244	10
Americium-245	1,000
Americium-246m	1,000
Americium-246	1,000
Curium-238	100
Curium-240	0.1
Curium-241	1
Curium-242	0.01
Curium-243	0.001
Curium-244	0.001
Curium-245	0.001
Curium-246	0.001
Curium-247	0.001
Curium-248	0.001
Curium-249	1,000
Berkelium-245	100
Berkelium-246	100
Berkelium-247	0.001
Berkelium-249	0.1
Berkelium-250	10
Californium-244	100
Californium-246	1
Californium-248	0.01
Californium-249	0.001
Californium-250	0.001
Californium-251	0.001
Californium-252	0.001
Californium-253	0.1
Californium-254	0.001
Any alpha emitting radionuclide not listed above or mixtures of alpha emitters of unknown composition	0.001
Einsteinium-250	100
Einsteinium-251	100
Einsteinium-253	0.1
Einsteinium-254m	1
Einsteinium-254	0.01
Fermium-252	1
Fermium-253	1
Fermium-254	10
Fermium-255	1
Fermium-257	0.01
Mendelevium-257	10
Mendelevium-258	0.01
Any radionuclide other than alpha emitting radionuclides not listed above, or mixtures of beta emitters of unknown composition	0.01

* To convert μCi to kBq, multiply the μCi value by 37.

[NOTE: For purposes of LAC 33:XV.451.E, 454.A, and 485.A where there is involved a combination of radionuclides in known amounts, the limit for the combination shall be derived as follows: determine, for each radionuclide in the combination, the ratio between the quantity present in the

combination and the limit otherwise established for the specific radionuclide when not in combination. The sum of such ratios for all radionuclides in the combination may not exceed "1" or unity.]

¹The quantities listed above were derived by taking 1/10th of the most restrictive ALI listed in Table I, Columns 1 and 2, of LAC 33:XV.499.Appendix B, rounding to the nearest factor of 10, and constraining the values listed between 37 Bq and 37 MBq (0.001 and 1,000 µCi). Values of 3.7 MBq (100 µCi) have been assigned for radionuclides having a radioactive half-life in excess of E+9 years, except rhenium, 37 MBq or 1,000 µCi, to take into account their low specific activity.

Appendix D. - Appendix E.Footnote 1. ...

[Editor's Note: Appendix F has been moved to §399, as Appendix D.]

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular R.S. 30:2104.

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Chapter 5. Radiation Safety Requirements for Industrial Radiographic Operations

Subchapter B. Personal Radiation Safety Requirements for Radiographers

§575. Training and Testing

A. - C.1. ...

2. Records of Annual Refresher Safety Training and Semiannual Inspections of Job Performance. The records must list the topics discussed during the refresher safety training, the dates the annual refresher safety training was conducted, and the names of the instructors and attendees. For inspections of job performance, the records must also include a list showing the items checked and any noncompliance observed by the radiation safety officer or designee.

D. - E. ...

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 20:653 (June 1994), LR 20:999 (September 1994), LR 23:1138 (September 1997), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2583 (November 2000), LR 27:1235 (August 2001), LR 28:1951 (September 2002), LR 29:34 (January 2003), LR 29:1470 (August 2003), amended by the

Office of Environmental Assessment, LR 30:2029 (September 2004), LR 31:54 (January 2005).

Subchapter C. Precautionary Procedures in Radiographic Operations

§588. Documents and Records Required at Temporary Job Sites and Applicable Field Stations

A. - A.6. ...

7. a copy of the card issued by the department granting radiographer trainee status to any radiographer trainee performing industrial radiography at the temporary job site;

8. - 11. ...

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

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Chapter 7. Use of Radionuclides in the Healing Arts

§756. Full Calibration Measurements on Teletherapy Units, Remote Afterloader Units, and Gamma Stereotactic Radiosurgery Units

A. - B.3. ...

4. A licensee shall make the full calibration measurements required by this Subsection in accordance with published protocols accepted by nationally-recognized bodies.

B.5. - C.7. ...

D. Records of Teletherapy Unit, Remote Afterloader Unit, and Gamma Stereotactic Radiosurgery Unit Full Calibrations. A licensee shall maintain a record of the teletherapy unit, remote afterloader unit, and gamma stereotactic radiosurgery unit full calibrations required by Subsections A, B, and C of this Section for three years. The record shall include:

1. the date of the calibration;

2. the manufacturer's name, model number, and serial number of the teletherapy, remote afterloader, or gamma stereotactic radiosurgery unit, the source, and the instruments used to calibrate the unit;

3. the results and an assessment of the full calibrations;

4. the results of the autoradiograph required for low dose-rate remote afterloader units; and

5. the signature of the authorized medical physicist who performed the full calibration.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January 1992), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 30:1182 (June 2004), amended by the Office of Environmental Assessment, LR 31:54 (January 2005).

§757. Periodic Spot-Checks

A. - A.3. ...

4. A licensee shall perform spot-checks required by Paragraph A.1 of this Section in accordance with procedures established by the authorized medical physicist. The authorized medical physicist does not need to actually perform the output spot-check measurements.

5. A licensee shall have the authorized medical physicist review the results of each output spot-check within 15 days. The authorized medical physicist shall promptly notify the licensee in writing of the results of each output spot-check. The licensee shall keep a copy of each written notification for two years.

A.6. - D.5.e. ...

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Air Quality and Radiation Protection, Radiation Protection Division, LR 18:34 (January 1992), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2590 (November 2000), LR 30:1183 (June 2004), amended by the Office of Environmental Assessment, LR 31:54 (January 2005).

Chapter 15. Transportation of Radioactive Material

§1503. Definitions

A. As used in this Chapter, the following definitions apply.

* * *

A_2 —the maximum activity of radioactive material, other than special form, LSA, and SCO material, permitted in a Type A package. These values are either listed in, or may be derived in accordance with the procedure prescribed in, Appendix A of 10 CFR Part 71.

* * *

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:1267 (June 2000), amended by the Office of Environmental Assessment, LR 31:55 (January 2005).

§1505. Exemptions

A. - C.2. ...

D. Any physician licensed by the state of Louisiana to dispense drugs in the practice of medicine is exempt from LAC 33:XV.1502 with respect to transport by the physician of licensed material for use in the practice of medicine. However, any physician operating under this exemption must be licensed under LAC 33:XV.Chapter 7.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Environmental Assessment, LR 31:55 (January 2005).

Chapter 20. Radiation Safety Requirements for Wireline Service Operations and Subsurface Tracer Studies

§2017. Design, Performance, and Certification Criteria for Sealed Sources Used in Downhole Operations

A. - A.1. ...

2. it must contain licensed radioactive material whose chemical and physical forms are as insoluble and nondispersible as practical; and

3. it must meet the following requirements:

a. for a sealed source manufactured on or before July 14, 1989, the requirements of USASI N5.10-1968, "Classification of Sealed Radioactive Sources," or the requirements in Subsection C or D of this Section; or

b. for a sealed source manufactured after July 14, 1989, the oil well-logging requirements of ANSI/HPS N43.6-1997, "Sealed Radioactive Sources—Classification"; or

c. for a sealed source manufactured after July 14, 1989, the sealed source's prototype has been tested and found to maintain its integrity after each of the following tests:

i. Temperature Test. The test source must be held at -40°C for 20 minutes, 600°C for 1 hour, and then be subjected to a thermal shock test with a temperature drop from 600°C to 20°C within 15 seconds.

ii. Impact Test. A 5 kg steel hammer, 2.5 cm in diameter, must be dropped from a height of 1 m onto the test source.

iii. Vibration Test. The test source must be subjected to a vibration from 25 Hz to 500 Hz at 5 g amplitude for 30 minutes.

iv. Puncture Test. A 1 gram hammer and pin, 0.3 cm pin diameter, must be dropped from a height of 1 m onto the test source.

v. Pressure Test. The test source must be subjected to an external pressure of 1.695×10^7 pascals (24,600 pounds per square inch absolute).

B. - E.2. ...

3. The requirements in Subparagraphs E.1.a-c of this Section do not apply to energy compensation sources (ECSs). ECSs must be registered with the U.S. Nuclear Regulatory Commission, an agreement state, or the Office of Environmental Services, Permits Division.

F. - F.1. ...

2. For well-logging applications without a surface casing for protecting fresh water aquifers, use of the ECS is

only subject to the requirements of Subsection H of this Section and LAC 33:XV.2004, 2014, 2015, 2016, and 2051.

G. - H. ...

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

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